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Curriculum Vitae

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PROFESSIONAL APPOINTMENTS

7/12– Professor of Computer Science, University of California, Irvine (UCI)
7/10– Professor of Earth System Science, UCI
9/10–8/13 Vice Chair of Graduate Studies, Department of Earth System Science, UCI
7/05–6/10 Associate Professor of Earth System Science, UCI
8/07–8/08 Visiting Researcher, Laboratoire de Glaciologie et Géophysique de l'Environnement (CNRS/LGGE), Grenoble, France
3/00–2/06 Affiliate Scientist of the Climate and Global Dynamics (CGD) Division, National Center for Atmospheric Research (NCAR), Boulder, CO
7/99–6/05 Assistant Professor of Earth System Science, UCI
7/98–9/99 Visiting Scientist in Atmospheric Chemistry and CGD Divisions, NCAR
7/96–6/98 Postdoctoral Fellow, Advanced Studies Program, NCAR
8/91–6/96 Graduate Research Assistant, University of Colorado at Boulder and NCAR
1/91–6/91 Visiting Faculty in Physical Sciences, College of the Atlantic, Bar Harbor, ME
11/88–12/90 Physicist, Technician, Smithsonian Astrophysical Observatory, Cambridge, MA

PROFESSIONAL PREPARATION

Harvard University	Physics	A.B.	1990
University of Colorado at Boulder	Astrophys., Planetary, and Atmospheric Sci.	M.S.	1993
University of Colorado at Boulder	Astrophys., Planetary, and Atmospheric Sci.	Ph.D.	1996

ELEVATOR SPEECH

I am a physicist who studies climate. I help piece together the climate puzzle so that as people alter Earth, intentionally or not, we better understand the likely outcomes. Rapidly changing parts of our planet fascinate me most—melting snow, blowing dust, and burning forests. Fast processes often indicate pressure points to which Earth is very sensitive. Recently we discovered that nothing heats the planet faster than pollution that darkens snow. This has helped spur the policy shift to reduce soot emissions. My current research includes desert dust and fire-emitted soot particulates, snowpack lifecycle and reflectance, wind-dispersal of nutrients and pathogens, wind-drag effects on deserts and oceans, and large-scale data analysis. A wonkier overview of my teaching and research is [here](#).

PUBLICATIONS

Complete, non-duplicative lists of my ISI-indexed articles are at <http://www.researcherid.com/rid/D-4485-2012> and <http://orcid.org/0000-0003-0129-8024>. To generate, search ISI (All-Databases option) for “*Author = zender, c* AND address = irvine OR boulder*”. Current and former **group members** are indicated thusly: ***high school, **under-graduate, *graduate student, †post-doc, ‡researcher.

IN PEER-REVIEW

- PR1. †**Parajuli, S. P.**, and **C. S. Zender** (2018), Projected changes in dust emissions and regional air quality due to the shrinking Salton Sea *Submitted to Aeolian Research*. ([PDF](#))

PEER-REVIEWED JOURNAL ARTICLES PUBLISHED OR IN-PRESS

- PJ72. ***Gorris, M. E.**, L. A. Cat, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2017), Coccidioidomycosis dynamics in relation to climate in the southwestern United States, *In Press in GeoHealth*, doi:10.1002/2017GH000095. ([PDF](#))
- PJ71. †**Parajuli, S. P.**, and **C. S. Zender** (2017), Connecting geomorphology to dust emission through high-resolution mapping of global land cover and sediment supply, *Aeolian Research*, **27**, 47–65, doi:10.1016/j.aeolia.2017.06.002. ([PDF](#))
- PJ70. Silver, J. D. and **C. S. Zender** (2017), The compression-error trade-off for large gridded data sets, *Geosci. Model Dev.*, **10**, 413–423, doi:10.5194/gmd-10-413-2017. ([PDF](#))
- PJ69. **Zender, C. S.** (2016), Bit Grooming: Statistically accurate precision-preserving quantization with compression, evaluated in the netCDF Operators (NCO, v4.4.8+), *Geosci. Model Dev.*, **9**, 3199–3211, doi:10.5194/gmd-9-3199-2016. ([PDF](#))
- PJ68. ***Wang, W.**, **C. S. Zender**, D. van As, P. C. J. P. Smeets, and M. R. van den Broeke (2016), A Retrospective, Iterative, Geometry-Based (RIGB) tilt correction method for radiation observed by automatic weather stations on snow-covered surfaces: application to Greenland, *The Cryosphere*, **10**, 727–741, doi:10.5194/tc-10-727-2016. ([PDF](#))
- PJ67. Yang, S., B. Xu, J. Cao, **C. S. Zender**, and M. Wang (2015), Climate effect of black carbon aerosol in a Tibetan Plateau Glacier, *Atmos. Environ.*, **111**, 71–78, doi: 10.1016/j.atmosenv.2015.03.016. ([PDF](#))
- PJ66. Scanza, R. A., N. M. Mahowald, S. Ghan, **C. S. Zender**, J. F. Kok, X. Liu, Y. Zhang, and S. Albani (2015), Modeling dust as component minerals in the Community Atmosphere Model: development of framework and impact on radiative forcing, *Atmos. Chem. Phys.*, **15**, 537–561, doi:10.5194/acp-15-537-2015. ([PDF](#))
- PJ65. Albani, S., N. M. Mahowald, A. T. Perry, R. A. Scanza, **C. S. Zender**, N. G. Heavens, V. Maggi, J. F. Kok, and B. L. Otto-Bliesner (2014), Improved dust representation in the Community Atmosphere Model, *J. Adv. Model. Earth Syst.*, **6**, 541–570, doi: 10.1002/2013MS000279. ([PDF](#))
- PJ64. ***Tosca, M. G.**, J. T. Randerson, and **C. S. Zender** (2013), Global impact of smoke aerosols from landscape fires on climate and the Hadley circulation, *Atmos. Chem. Phys.*, **13**(10), 5227–5241, doi:10.5194/acp-13-5227-2013. ([PDF](#))

- PJ63. Bond, T. C., and 30 co-authors including **C. S. Zender** (2013), Bounding the role of black carbon in the climate system: A scientific assessment, *J. Geophys. Res. Atm.*, **118**, doi:10.1002/jgrd.50171. ([PDF](#))
- PJ62. **Zender, C. S.** (2012), News & Views: Snowfall brightens Antarctic future, *Nature Clim. Change*, **2**(11), 770–771, doi:10.1038/nclimate1730. ([PDF](#))
- PJ61. †**Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2012), Recent Northern Hemisphere tropical expansion primarily driven by black carbon and tropospheric ozone, *Nature*, **485**(7398), 350–354, doi:10.1038/nature11097. ([PDF](#))
- PJ60. ***Han, Q.**, **C. S. Zender**, J. K. Moore, C. S. Buck, Y. Chen, A. Johansen, and C. I. Measures (2012), Global estimates of mineral dust aerosol iron and aluminum solubility that account for particle size using diffusion-controlled and surface-area-controlled approximations, *Global Biogeochem. Cycles*, **26**, GB2038, doi:10.1029/2011GB004816. ([PDF](#))
- PJ59. †**Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2012), The Equilibrium Response to Idealized Thermal Forcings in a Comprehensive GCM: Implications for Recent Tropical Expansion, *Atmos. Chem. Phys.*, **12**, 4795–4816, doi:10.5194/acp-12-4795-2012. ([PDF](#))
- PJ58. **Zender, C. S.**, *****A. G. Krolewski**, ***M. G. Tosca**, and J. T. Randerson (2012), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo, *Atmos. Chem. Phys.*, **12**, 3437–3454, doi:10.5194/acp-12-3437-2012. ([HTML](#), [PDF](#))
- PJ57. †**Wang, X.**, C. de Linage, J. Famiglietti, and **C. S. Zender** (2011), Gravity Recovery and Climate Experiment (GRACE) detection of water storage changes in the Three Gorges Reservoir of China and comparison with *in situ* measurements, *Water Resour. Res.*, **47**, W12502, doi:10.1029/2011WR010534. ([PDF](#))
- PJ56. Huneus, N., M. Schulz, Y. Balkanski, J. Griesfeller, S. Kinne, J. Prospero, S. Bauer, O. Boucher, M. Chin, F. Dentener, T. Diehl, R. Easter, D. Fillmore, S. Ghan, P. Ginoux, ***A. Grini**, L. Horowitz, D. Koch, M. C. Krol, W. Landing, X. Liu, N. Mahowald, R. Miller, J.-J. Morcrette, G. Myhre, J. E. Penner, J. Perlwitz, P. Stier, T. Takemura, and **C. S. Zender** (2011), Global dust model intercomparison in AeroCom phase I, *Atmos. Chem. Phys.*, **11**(15), 7781–7816, doi:10.5194/acp-11-7781-2011. ([HTML](#), [PDF](#))
- PJ55. †**Allen, R. J.**, and **C. S. Zender** (2011), Forcing of the Arctic Oscillation by Eurasian Snow Cover, *J. Climate*, **24**(24), 6528–6539, doi:10.1175/2011JCLI4157.1. ([PDF](#))
- PJ54. †**Allen, R. J.**, and **C. S. Zender** (2011), The role of eastern Siberian snow and soil moisture anomalies in quasi-biennial persistence of the Arctic and North Atlantic Oscillations, *J. Geophys. Res. Atm.*, **116**, D16125, doi:10.1029/2010JD015311. ([PDF](#))
- PJ53. †**Wang, X.**, and **C. S. Zender** (2011), Arctic and Antarctic diurnal and seasonal variations of snow albedo from multiyear Baseline Surface Radiation Network measurements, *J. Geophys. Res. Earth Surf.*, **116**, F03008, doi:10.1029/2010JF001864. ([PDF](#))
- PJ52. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, D. L. Nelson, D. J. Diner, and J. A. Logan (2011), Dynamics of fire plumes and smoke clouds associated with peat and deforestation fires in Indonesia, *J. Geophys. Res. Atm.*, **116**, D08207, doi:10.1029/2010JD015148. ([PDF](#))
- PJ51. Mahowald, N. M., S. Kloster, S. Engelstaedter, J. K. Moore, S. Mukhopadhyay, J. R.

- McConnell, S. Albani, S. C. Doney, A. Bhattacharya, M. A. J. Curran, ***M. G. Flanner**, F. M. Hoffman, D. M. Lawrence, K. Lindsay, P. A. Mayewski, J. Neff, D. Rothenberg, E. Thomas, P. E. Thornton, and **C. S. Zender** (2010), Observed 20th century desert dust variability: impact on climate and biogeochemistry, *Atmos. Chem. Phys.*, **10**, 12585–12628, doi:10.5194/acp-10-10875-2010. ([PDF](#))
- PJ50. †**Allen, R. J.**, and **C. S. Zender** (2010), The effects of continental-scale snow albedo anomalies on the wintertime Arctic Oscillation, *J. Geophys. Res. Atmos.* **115**, D23105, doi:10.1029/2010JD014490. ([PDF](#))
- PJ49. ***Han, Q.**, and **C. S. Zender** (2010), Desert dust aerosol age characterized by mass-age tracking of tracers, *J. Geophys. Res. Atmos.*, **115**, D22201, doi:10.1029/2010JD014155. ([PDF](#))
- PJ48. †**Wang, X.**, and **C. S. Zender** (2010), Constraining MODIS snow albedo at large solar zenith angles: Implications for the surface energy budget in Greenland, *J. Geophys. Res. Earth Surf.*, **115**, F04015, doi:10.1029/2009JF001436. ([PDF](#))
- PJ47. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, ***M. G. Flanner**, and P. J. Rasch (2010), Do biomass burning aerosols intensify drought in equatorial Asia during El Niño?, *Atmos. Chem. Phys.*, **10**(8), 3515–3528, doi:10.5194/acp-10-3515-2010. ([HTML](#), [PDF](#))
- PJ46. ***Capps, S. B.**, and **C. S. Zender** (2010), Estimated global ocean wind power potential from QuikSCAT observations, accounting for turbine characteristics and siting, *J. Geophys. Res. Atmos.*, **115**, L09102, doi:10.1029/2009JD012679. ([PDF](#))
- PJ45. †**Wang, X.**, and **C. S. Zender** (2010), MODIS snow albedo bias at high solar zenith angle relative to theory and to *in situ* observations in Greenland, *Rem. Sens. Environ.*, **114**(3), 563–575, doi:10.1016/j.rse.2009.10.014. ([PDF](#))
- PJ44. Krishnamurthy, A., J. K. Moore, N. M. Mahowald, †**C. Luo**, and **C. S. Zender** (2010), Impacts of atmospheric nutrient inputs on marine biogeochemistry, *J. Geophys. Res. Biogeosci.*, **115**, G01006, doi:10.1029/2009JG001115. ([PDF](#))
- PJ43. Gallet, J.-C., F. Dominé, **C. S. Zender**, and G. Picard (2009), Measurement of the specific surface area of snow using infrared reflectance in an integrating sphere at 1310 and 1550 nm, *The Cryosphere*, **3**(2), 167–182, doi:10.5194/tc-3-167-2009. ([HTML](#), [PDF](#))
- PJ42. Krishnamurthy, A., J. K. Moore, N. M. Mahowald, †**C. Luo**, S. Doney, K. Lindsay, and **C. S. Zender** (2009), Impacts of increasing soluble iron and nitrogen deposition on ocean biogeochemistry, *Global Biogeochem. Cycles*, **23**, GB3016, doi:10.1029/2008GB003440. ([PDF](#))
- PJ41. ***Flanner, M. G.**, **C. S. Zender**, P. G. Hess, N. M. Mahowald, T. H. Painter, V. Ramanathan, and P. J. Rasch (2009), Springtime Warming and Reduced Snow Cover from Carbonaceous Particles, *Atmos. Chem. Phys.*, **9**(7), 2481–2497, doi:10.5194/acp-9-2481-2009. ([HTML](#), [PDF](#))
- PJ40. ***Capps, S. B.**, and **C. S. Zender** (2009), Global Ocean Wind Power Sensitivity to Surface Layer Stability, *Geophys. Res. Lett.*, **36**, L09801, doi:10.1029/2008GL037063. ([PDF](#))
- PJ39. ***Wang, D. L.**, **C. S. Zender**, and S. F. Jenks (2009), Efficient Clustered Server-side Data Analysis Workflows using SWAMP, *Earth Sci. Inform.*, **2**(3), 141–155, doi:10.1007/s12145-009-0021-z. ([PDF](#))

- PJ38. ***Capps, S. B.**, and **C. S. Zender** (2008), Observed and CAM3 GCM Sea Surface Wind Speed Distributions: Characterization, Comparison, and Bias Reduction, *J. Climate*, **21**(24), 6569–6585, doi:10.1175/2008JCLI2374.1. ([PDF](#))
- PJ37. **Zender, C. S.** (2008), Analysis of Self-describing Gridded Geoscience Data with netCDF Operators (NCO), *Environ. Modell. Softw.*, **23**(10), 1338–1342, doi:10.1016/j.envsoft.2008.03.004. ([PDF](#))
- PJ36. ***Han, Q.**, J. K. Moore, **C. S. Zender**, C. Measures, and D. Hydes (2008), Constraining Oceanic Dust Deposition Using Surface Ocean Dissolved Al, *Global Biogeochem. Cycles*, **22**, GB2003, doi:10.1029/2007GB002975. ([PDF](#))
- PJ35. McConnell, J. R., P. R. Edwards, G. L. Kok, ***M. G. Flanner**, **C. S. Zender**, E. S. Saltzman, J. R. Banta, D. R. Pasteris, M. M. Carter, and J. D. W. Kahl (2007), 20th-Century Industrial Black Carbon Emissions Altered Arctic Climate Forcing, *Science*, **317**(5843), 1381–1384, doi:10.1126/science.1144856. ([PDF](#))
- PJ34. **Zender, C. S.**, and †**H. J. Mangalam** (2007), Scaling Properties of Common Statistical Operators for Gridded Datasets, *Int. J. High Perform. Comput. Appl.*, **21**(4), 485–498, doi:10.1177/1094342007083802. ([PDF](#))
- PJ33. Krishnamurthy, A., J. K. Moore, **C. S. Zender**, and †**C. Luo** (2007), Effects of Atmospheric Inorganic Nitrogen Deposition on Ocean Biogeochemistry. *J. Geophys. Res.*, **112**, G02019, doi:10.1029/2006JG000334. ([PDF](#))
- PJ32. Talamantes, J., S. Behseta, and **C. S. Zender** (2007), Fluctuations in Climate and Incidence of Coccidioidomycosis in Kern County, California: a review, *Ann. N.Y. Acad. Sci.*, **1111**, 73–82, doi:10.1196/annals.1406.028. ([PDF](#))
- PJ31. ***Flanner, M. G.**, **C. S. Zender**, J. T. Randerson, and P. J. Rasch (2007), Present-Day Climate Forcing and Response from Black Carbon in Snow, *J. Geophys. Res.*, **112**(D11), D11202, doi:10.1029/2006JD008003. ([PDF](#))
- PJ30. †**Luo, C.**, **C. S. Zender**, †**H. Bian**, and S. Metzger (2007), Role of ammonia chemistry and coarse mode aerosols in global climatological inorganic aerosol distributions, *Atmos. Environ.*, **41**(12), 2510–2533, doi:10.1016/j.atmosenv.2006.11.030. ([PDF](#))
- PJ29. Talamantes, J., S. Behseta, and **C. S. Zender** (2007), Statistical Modeling of Valley Fever Data in Kern County, California, *Int. J. Biometeorol.*, **51**(4), 307–313, doi:10.1007/s00484-006-0065-4. ([PDF](#))
- PJ28. Randerson, J. T., H. Liu, ***M. G. Flanner**, S. D. Chambers, Y. Jin, P. G. Hess, G. Pfister, M. C. Mack, K. K. Treseder, L. R. Welp, F. S. Chapin, J. W. Harden, M. L. Goulden, E. Lyons, J. C. Neff, E. A. G. Schuur and **C. S. Zender** (2006), The Impact of Boreal Forest Fire on Climate Warming, *Science*, **314**(5802), 1130–1133, doi:10.1126/science.1132075. ([PDF](#))
- PJ27. Yoshioka, M., N. M. Mahowald, A. J. Conley, W. D. Collins, D. W. Fillmore, **C. S. Zender**, and D. B. Coleman (2007), Impact of Desert Dust Radiative Forcing on Sahel Precipitation: Relative importance of dust compared to sea surface temperature variations, vegetation changes and greenhouse gas warming, *J. Climate*, **20**(8), 1445–1467, doi:10.1175/JCLI4056.1. ([PDF](#))
- PJ26. Washington, R., M. C. Todd, G. Lizcano, I. Tegen, C. Flamant, I. Koren, P. Ginoux, S. Engelstaedter, C. S. Bristow, **C. S. Zender**, A. S. Goudie, A. Warren, J. M. Prospero (2006), Links between topography, wind, deflation, lakes and dust: The case of the Bodélé Depression, Chad, *Geophys. Res. Lett.*, **33**(9), L09401, doi:10.1029/

- 2006GL025827. ([PDF](#))
- PJ25. Mahowald, N. M., D. R. Muhs, S. Levis, P. J. Rasch, M. Yoshioka, **C. S. Zender**, and [‡]**C. Luo** (2006), Change in atmospheric mineral aerosols in response to climate: last glacial period, pre-industrial, modern and doubled carbon dioxide climates, *J. Geophys. Res.* **111**(D10), D10202, doi:10.1029/2005JD006653. ([PDF](#))
- PJ24. ***Flanner, M. G.**, and **C. S. Zender** (2006), Linking Snowpack Microphysics and Albedo Evolution, *J. Geophys. Res.*, **111**(D12), D12208, doi:10.1029/2005JD006834. ([PDF](#))
- PJ23. Cakmur, R. V., R. L. Miller, J. Perlwitz, D. Koch, I. V. Geogdzhayev, P. Ginoux, I. Tegen, and **C. S. Zender** (2006), Constraining the Magnitude of the Global Dust Cycle by Minimizing the Difference Between a Model and Observations, *J. Geophys. Res.*, **111**(D6), D06207, doi:10.1029/doi:2005JD005791. ([PDF](#))
- PJ22. **Zender, C. S.**, and J. Talamantes (2006), Climate controls on valley fever incidence in Kern County, California, *Int. J. Biometeorol.*, **50**(3), 174–182, doi:10.1007/s00484-005-0007-6. ([PDF](#))
- PJ21. **Zender, C. S.**, and J. Talamantes (2006), Solar Absorption by Mie Resonances in Cloud Droplets, *J. Quant. Spectrosc. Radiat. Transfer*, **98**(1), 122–129, doi:10.1016/j.jqsrt.2005.05.084. ([PDF](#))
- PJ20. **Zender, C. S.**, and ***E. Y. Kwon** (2005), Regional Contrasts in Dust Emission Responses to Climate, *J. Geophys. Res.*, **110**(D13), D13201, doi:10.1029/2004JD005501. ([PDF](#))
- PJ19. ***Flanner, M. G.**, and **C. S. Zender** (2005), Snowpack Radiative Heating: Influence on Tibetan Plateau Climate, *Geophys. Res. Lett.*, **32**(6), L06501, doi:10.1029/2004GL022076. ([PDF](#))
- PJ18. ***Grini, A.**, G. Myhre, **C. S. Zender**, and I. S. A. Isaksen (2005), Model simulations of dust sources and transport in the global troposphere, *J. Geophys. Res.*, **110**(D2), D02205, doi:10.1029/2004JD005037. ([PDF](#))
- PJ17. **Zender, C. S.**, R. Miller, and I. Tegen (2004), Quantifying Mineral Dust Mass Budgets: Terminology, Constraints, and Current Estimates, *Eos Trans. AGU*, **85**(48), 509–512, doi:10.1029/2004EO480002. ([PDF](#))
- PJ16. ***Grini, A.**, and **C. S. Zender** (2004), Roles of saltation, sandblasting, and wind speed variability on mineral dust aerosol size distribution during the Puerto Rican Dust Experiment (PRIDE), *J. Geophys. Res.*, **109**(D7), D07202, doi:10.1029/2003JD004233. ([PDF](#))
- PJ15. Ammann, C. M., G. A. Meehl, W. M. Washington, and **C. S. Zender** (2003), A Monthly and Latitudinally Varying Volcanic Forcing Dataset in Simulations of 20th Century Climate, *Geophys. Res. Lett.*, **30**(12), 1657, doi:10.1029/2003GL016875. ([PDF](#))
- PJ14. Mahowald, N. M., C. Luo, and J. del Corral, and **C. S. Zender** (2003), Interannual variability in Atmospheric Mineral Aerosols from a 22-year Model Simulation and Observational Data, *J. Geophys. Res.*, **108**(D12), 4352, doi:10.1029/2002JD002821. ([PDF](#))
- PJ13. [†]**Bian, H.**, and **C. S. Zender** (2003), Mineral dust and global tropospheric chemistry: Relative roles of photolysis and heterogeneous uptake, *J. Geophys. Res.*, **108**(D21), 4672, doi:10.1029/2002JD003143. ([PDF](#))

- PJ12. **Zender, C. S.**, †**D. Newman**, and O. Torres (2003), Spatial Heterogeneity in Aeolian Erodibility: Uniform, Topographic, Geomorphic, and Hydrologic Hypotheses, *J. Geophys. Res.*, **108**(D17), 4543, doi:10.1029/2002JD003039. ([PDF](#))
- PJ11. **Zender, C. S.**, †**H. Bian**, and †**D. Newman** (2003), Mineral Dust Entrainment And Deposition (DEAD) model: Description and 1990s dust climatology, *J. Geophys. Res.*, **108**(D14), 4416, doi:10.1029/2002JD002775. ([PDF](#))
- PJ10. ***Grini, A.**, **C. S. Zender**, and P. Colarco (2002), Saltation sandblasting behavior during mineral dust aerosol production, *Geophys. Res. Lett.*, **29**(18), 1868, doi:10.1029/2002GL015248. ([PDF](#))
- PJ9. Mahowald, N. M., **C. S. Zender**, C. Luo, D. Savoie, O. Torres, and J. del Corral (2002), Understanding the 30 year Barbados desert dust record, *J. Geophys. Res.*, **107**(D21), 4561, doi:10.1029/2002JD002097. ([PDF](#))
- PJ8. Collins, W. D., P. J. Rasch, B. E. Eaton, D. W. Fillmore, J. T. Kiehl, C. T. Beck, and **C. S. Zender** (2002), Simulation of Aerosol Distributions and Radiative Forcing for INDOEX: Regional Climate Impacts, *J. Geophys. Res.*, **107**(D19), 8028, doi:10.1029/2000JD000032. ([PDF](#))
- PJ7. Yu, S., **C. S. Zender**, and V. K. Saxena (2001), Direct radiative forcing and atmospheric absorption by boundary layer aerosol in the southeastern US: model estimates on the basis of new observations, *Atmos. Env.*, **35**(23), 3967–3977, doi:10.1016/S1352-2310(01)00187-X. ([PDF](#))
- PJ6. Collins, W. D., P. J. Rasch, B. E. Eaton, B. Khattatov, J.-F. Lamarque, and **C. S. Zender** (2001), Forecasting aerosols using a chemical transport model with assimilation of satellite aerosol retrievals: Methodology for INDOEX, *J. Geophys. Res.*, **106**(D7), 7313–7336, doi:10.1029/2000JD900507. ([PDF](#))
- PJ5. **Zender, C. S.** (1999), Global climatology of abundance and solar absorption of oxygen collision complexes, *J. Geophys. Res.*, **104**(D20), 24471–24484, doi:10.1029/1999JD900797. ([PDF](#))
- PJ4. Cess, R. D., M. Zhang, F. P. J. Valero, S. K. Pope, A. Bucholtz, B. Bush, **C. S. Zender**, and J. Vitko Jr. (1999), Absorption of solar radiation by the cloudy atmosphere: Further interpretations of collocated aircraft measurements, *J. Geophys. Res.*, **104**(D2), 2059–2066, doi:10.1029/1998JD200058. ([PDF](#))
- PJ3. **Zender, C. S.**, B. Bush, S. K. Pope, A. Bucholtz, W. D. Collins, J. T. Kiehl, F. P. J. Valero, and J. Vitko Jr. (1997), Atmospheric absorption during the Atmospheric Radiation Measurement (ARM) Enhanced Shortwave Experiment (ARESE), *J. Geophys. Res.*, **102**(D25), 29901–29915, doi:10.1029/97JD01781. ([PDF](#))
- PJ2. **Zender, C. S.**, and J. T. Kiehl (1997), Sensitivity of climate simulations to radiative effects of tropical anvil structure, *J. Geophys. Res.*, **102**(D20), 23793–23803, doi:10.1029/97JD02009. ([PDF](#))
- PJ1. **Zender, C. S.**, and J. T. Kiehl (1994), Radiative sensitivities of tropical anvils to small ice crystals, *J. Geophys. Res.*, **99**(D12), 25869–25880, doi:10.1029/94JD02090. ([PDF](#))

PEER-REVIEWED TECHNICAL REPORTS

- PT1. **Zender, C. S.**, P. J. T. Leonard (2016), and the NASA Dataset Interoperability Working Group (DIWG), ES/DS-RFC-028: Dataset Interoperability Recommendations

for Earth Science, National Aeronautics and Space Administration (NASA) Earth Science Data Systems (ESDS) Standards Office (ESO), Washington, DC. ([PDF](#))

PEER-REVIEWED CONFERENCE PROCEEDINGS

- PC2. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2008), Clustered Workflow Execution of Retargeted Data Analysis Scripts, in *Cluster Computing and the Grid, 2008. CC-GRID '08. 8th IEEE International Symposium on. Lyon, France, 19–22 May, 2008*. IEEE Computer Society, 449–458, doi:10.1109/CCGRID.2008.69. (65 accepted out of 201 submissions) ([PDF](#))
- PC1. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), Server-side parallel data reduction and analysis, in *Advances in Grid and Pervasive Computing, Second International Conference on, GPC 2007, Paris, France, May 2–4, 2007, Proceedings*. IEEE Lecture Notes in Computer Science, vol. 4459, edited by C. Cérin and K.-C. Li, pp. 744–750, Springer-Verlag, Berlin/Heidelberg, doi:10.1007/978-3-540-72360-8_67. (80 accepted out of 217 submissions) ([PDF](#))

CONFERENCE REPORTS

- CR1. M. Dubey, **C. S. Zender**, C. Folland, and P. Chýlek (2008), Global Warming and the Next Ice Age, *Bull. Am. Meteorol. Soc.*, **89**(12), 1905–1909, doi:10.1175/2008BAMS2359.1. ([PDF](#))

EXTENDED ABSTRACTS

- EA7. **Zender, C. S.**, F. Dominé, J.-C. Gallet, and G. Picard (2010): Darkening of Soot-doped Natural Snow: Measurements and Model, in Pedersen et al. *Report from the international workshop: Black Carbon in Snow—Sampling, Albedo Effects and Climate Impact*, Tromsø, Norway, 13–14 August 2009. Norwegian Polar Institute Brief Report Series 17, 40–44, May 2010, ISBN: 978-82-7666-270-2. ([PDF](#))
- EA6. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), DAP-enabled Server-side Data Reduction and Analysis, *Proceedings of the 23rd AMS Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Paper 3B.2, January 14–18, San Antonio, TX. American Meteorological Society Annual Meeting, AMS Press, Boston, MA. ([PDF](#))
- EA5. **Zender, C. S.**, J. Talamantes, and S. Behseta (2007), Does Climate Control Valley Fever Incidence in California?, *Proceedings of the 16th AMS Conference on Applied Climatology*, Paper 2.2, January 14–18, San Antonio, TX. American Meteorological Society Annual Meeting, AMS Press, Boston, MA. ([PDF](#))
- EA4. **Zender, C. S.**, and ***D. L. Wang** (2007), High performance distributed data reduction and analysis with the netCDF Operators (NCO), *Proceedings of the 23rd AMS Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Paper 3B.4, January 14–18, San Antonio, TX. American Meteorological Society Annual Meeting, AMS Press, Boston, MA. ([PDF](#))
- EA3. **Zender, C. S.** and ‡**D. J. Newman** (2002), Simulated Global Atmospheric Dust Distribution: Sensitivity to Regional Topography, Geomorphology, and Hydrology. *Proceedings of the Fifth International Conference on Aeolian Research (ICAR5) and*

Global Change & Terrestrial Ecosystem-Soil Erosion Network (GCTE-SEN) joint meeting, Lubbock, TX, July 22–25. ([PDF](#))

- EA2. **Zender, C. S.** (1999), Radiative Forcing by Mineral Dust, *Proceedings of the First International Workshop on Mineral Dust*, Boulder, CO, June 9–11. ([PDF](#))
- EA1. **Zender, C. S.** and P. Chýlek (1998), A Global Climatology of O₂·O₂, O₂·N₂, and H₂O·H₂O Abundance and Absorption, *Proceedings of the Eighth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, Tucson, AZ, March 23–27. ([PDF](#))

NEWSPAPERS, MAGAZINES, TRADE JOURNALS

- N4. **Zender, C. S.** (2011), Op-Ed: More Dangerous than Japan Radiation, *OC Register*, April 18, 2011. ([HTML](#)) ([PDF](#))
- N3. **Zender, C. S.** (2004), There’s Got to Be a Morning After “The Day After Tomorrow”, *OC Weekly*, 9(39), p. 24, June 4–10. ([HTML](#)) ([PDF](#))
- N2. **Zender, C. S.** (2004), “UC Irvine Extends Climate Research with IBM Supercomputer”, *Syllabus/Campus Technology*, July–August, pp. 4–5. ([HTML](#)) ([PDF](#))
- N1. **Zender, C. S.** (2004), “Extending Climate Research at ESMF”, *Scientific Computing & Instrumentation*, September. ([HTML](#)) ([PDF](#))

INVITED PRESENTATIONS AT EDUCATIONAL, GOVERNMENTAL INSTITUTIONS

- IE35. **Zender, C. S.** (2017): CF2-Group: Hierarchical Data and Metadata Extensions to Climate/Forecast Conventions. Presented to Workshop on Advancing netCDF-CF for the Geoscience Community, University Corporation for Atmospheric Research, Boulder, CO, September 6–8, 2017. ([PDF](#))
- IE34. **Zender, C. S.** (2016): Hierarchical Data and Metadata Extensions to Climate/Forecast Conventions. Presented to Workshop on Advancing netCDF-CF for the Geoscience Community, University Corporation for Atmospheric Research, Boulder, CO, May 24–26, 2016. ([PDF](#))
- IE33. **Zender, C. S.** (2016): Regridding Swath, Curvilinear, Rectangular, and Unstructured Data (SCRUD). Presented to the NASA Goddard Earth Sciences (GES) Data and Information Services Center (DISC), Goddard Space Flight Center, Greenbelt, MD, April 5, 2016. ([PDF](#))
- IE32. **Zender, C. S.** (2015): Windblown Desert Dust: A Climate Wildcard. Presented to the US-Iran National Academies Symposium on Climate Change: Impacts and Mitigation, Beckman Center of the U.S. National Academies of Science & Engineering, Irvine, CA, March 30, 2015. (*Keynote*) ([PDF](#))
- IE31. **Zender, C. S.** (2014): Use Hierarchical Storage and Analysis to Exploit Intrinsic Parallelism. Presented to the NASA Goddard Earth Sciences (GES) Data and Information Services Center (DISC), Goddard Space Flight Center, Greenbelt, MD, March 27, 2014. ([PDF](#))
- IE30. **Zender, C. S.** (2013): Global Warming: Science Mistaken as Politics. Presented to the Summer Science Program, New Mexico Institute of Mining and Technology, Socorro, NM, July 1, 2013. ([PDF](#))

- IE29. **Zender, C. S.**, and ***M. G. Flanner** (2012): Does surface darkening by snow and ice impurities alter climate? Presented to the Department of Environmental Sciences, University of Virginia, Charlottesville, VA, November 29, 2012. ([PDF](#))
- IE28. **Zender, C. S.**, and ***M. G. Flanner** (2012): Climate Effects of Combustion and Dust Aerosols in Snow. Presented to the Climate Science Program, California State University Northridge, Northridge, CA, September 21, 2012. ([PDF](#))
- IE27. **Zender, C. S.**, ***S. B. Capps**, and ***A. Grini** (2011): Climate Sensitivity to Sub-gridscale Horizontal Winds. Presented to the Indian Institute for Tropical Meteorology, Pune, India, February 7, 2011. ([PDF](#))
- IE26. **Zender, C. S.**, ***M. G. Flanner**, F. Dominé, and J. McConnell (2011): After the Fall: Consequences of Combustion and Dust Aerosols in Snow. Presented to the Divecha Centre for Climate Change, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru, India, January 31, 2011. ([PDF](#))
- IE25. **Zender, C. S.**, ***S. B. Capps**, and ***A. Grini** (2011): Climate Sensitivity to Sub-gridscale Horizontal Winds. Presented to the Divecha Centre for Climate Change, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru, India, January 31, 2011. ([PDF](#))
- IE24. **Zender, C. S.**, ***M. Tosca**, and J. Randerson (2011), Does Indonesian Fire-emitted Aerosol Worsen Regional Drought? Presented to the Divecha Centre for Climate Change, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru, India, January 27, 2011. ([PDF](#))
- IE23. **Zender, C. S.**, ***M. G. Flanner**, F. Dominé, and J. McConnell (2010): After the Fall: Consequences of Combustion and Dust Aerosols in Snow. Presented to the Department of Atmospheric and Oceanic Sciences, University of California, Los Angeles, CA, March 3, 2010. ([PDF](#))
- IE22. **Zender, C. S.**, ***S. B. Capps**, and ***A. Grini** (2008): Climate Sensitivity to Sub-gridscale Horizontal Winds. Presented to the Climate and Global Dynamics (CGD) Division of the National Center for Atmospheric Research (NCAR), Boulder, CO, October 13, 2008. ([PDF](#))
- IE21. **Zender, C. S.** and ***M. G. Flanner** (2007): Present, Past, and Future Climate Effects and Efficacy of Dirty Snow. Presented to the Climate and Global Dynamics (CGD) Division of the National Center for Atmospheric Research (NCAR), Boulder, CO, November 29, 2007. ([PDF](#))
- IE20. **Zender, C. S.** (2007): Snowpack Radiative Transfer. Presented to the Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE), Grenoble, France, October 23, 2007.
- IE19. **Zender, C. S.** (2007): Arctic Climate Effects of Black Carbon. Presented to the Oversight and Government Reform Committee, United States House of Representatives, Washington, DC, October 18, 2007. ([Video](#), [Oral](#), [Written](#))
- IE18. **Zender, C. S.**, and ***M. G. Flanner** (2007): Present, Past, and Future Climate Effects and Efficacy of Dirty Snow. Presented to the Laboratoire de Glaciologie et Géophysique de l'Environnement (LGGE), Grenoble, France, September 6, 2007. ([PDF](#))
- IE17. **Zender, C. S.**, ***M. G. Flanner**, J. T. Randerson, N. Mahowald, P. J. Rasch, M. Yoshioka, T. H. Painter (2006): Present and Last Glacial Climate Effects of Dust and Soot in Snow. Presented to the Climate and Global Dynamics (CGD) Division

- of the National Center for Atmospheric Research (NCAR), Boulder, CO, October 3, 2006. ([PDF](#))
- IE16. **Zender, C. S.** (2005): Distributed Data Reduction and Analysis: An Overview with Applications to Californian Climate and Energy Demand. Presented to the UCI Calit2 SURF-IT program, University of California, Irvine, Irvine, CA, August 23, 2005. ([PDF](#))
- IE15. **Zender, C. S.** (2005): Regional Contrasts in Soil Dust Emission Responses to Climate. Presented to the Department of Crop and Soil Sciences, Washington State University, Pullman, WA, February 2, 2005. ([PDF](#))
- IE14. **Zender, C. S.** and ***M. G. Flanner** (2005): Snowpack Radiative Heating: Influence on Tibetan Plateau Climate. Presented to the Climate and Global Dynamics Division, National Center for Atmospheric Research, Boulder, CO, January 20, 2005. ([PDF](#))
- IE13. **Zender, C. S.** (2004): The Influence of Wind Erosion in Past, Present, and Future Climates, Presented to the Institut de Ciència i Tecnologia Ambientals Seminar, Universitat Autònoma de Barcelona, Spain, March 30, 2004.
- IE12. **Zender, C. S.** (2004): Global Patterns of Wind Erosion and Dust Emission in the Present Climate. Presented to the Department of Chemical Engineering, Universitat Polytechnica de Catalunya, Spain, March 26, 2004.
- IE11. **Zender, C. S.**, **‡D. J. Newman**, and O. Torres (2003): Spatial Heterogeneity in Aeolian Erodibility: Uniform, Topographic, Geomorphic, and Hydrologic Hypotheses. Presented to the Department of Geophysics, University of Oslo, Norway, January 16, 2003.
- IE10. **Zender, C. S.** (2001): Understanding the Global Distribution and Radiative Forcing of Mineral Dust Aerosol. Presented to the Department of Earth Sciences, University of Southern California, Los Angeles, CA, December 3, 2001.
- IE9. **Zender, C. S.** (2001): Understanding the Global Distribution and Radiative Forcing of Mineral Dust Aerosol. Presented to the Department of Environmental Science and Engineering, California Institute of Technology, Pasadena, CA, November 15, 2001.
- IE8. **Zender, C. S.** (2001): Re-examining radiative forcing by clouds, aerosols, and gases. Presented to the Department of Atmospheric Science, University of California, Los Angeles, CA, April 25, 2001.
- IE7. **Zender, C. S.** (2001): Aeolian Mineral Dust in the Climate System: Observations, Models, and Implications. Presented to the Department of Earth Sciences, University of California, Santa Cruz, CA, February 21, 2001.
- IE6. **Zender, C. S.** (2001): Re-examining radiative forcing by clouds, aerosols, and gases. Presented to the Department of Earth Sciences, University of California, Santa Cruz, CA, February 20, 2001.
- IE5. **Zender, C. S.** (2001): Modeling the Global Distribution of Mineral Dust. Presented to the Bren School of Environmental Science and Management, University of California, Santa Barbara, CA, January 19, 2001.
- IE4. **Zender, C. S.** (2000): Modeling the Global Distribution of Mineral Dust. Presented to the Department of Earth System Science, University of California, Irvine, CA, December 1, 2000.
- IE3. **Zender, C. S.** (1998): Discrepancies in the Solar Radiative Energy Budget: The roles of Mineral Dust and Collision-Induced Absorption. Presented to the Department of

Earth System Science, University of California, Irvine, CA, November 16, 1998.

IE2. **Zender, C. S.** (1998): Enhanced Cloud Absorption: An Overview and Recent Results. Presented to the Department of Meteorology, Florida State University, Tallahassee, FL, April 9, 1998.

IE1. **Zender, C. S.** (1998): Mineral Dust in the Troposphere: Observations and Implications. Presented to the Department of Environmental Sciences, University of Virginia, Charlottesville, VA, February 27, 1998.

INVITED PRESENTATIONS AT PROFESSIONAL MEETINGS & WORKSHOPS

IM24. **C. S. Zender** (2017), New Methods to Generate, Regrid, and Split Climate Data. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) All-Hands Meeting, Potomac, MD, June 5–7, 2017. ([PDF](#))

IM23. **C. S. Zender** and C. Deng (2017), Solar Radiation Treatments in Snow and Sea-Ice. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) All-Hands Meeting, Potomac, MD, June 5–7, 2017. ([PDF](#))

IM22. **C. S. Zender** (2017): End of the Dark Ages: Artificial Sky Brightness in the Anthropocene. Presented to the Fourth Santa Fe Conference on Global & Regional Climate Change, Santa Fe, NM, February 5–10, 2017. ([PDF](#))

IM21. **C. S. Zender** (2015): Optimizing Intrinsic Parallelism to generate climatologies with netCDF Operators (NCO). Presented to the DOE Accelerated Climate Modeling for Energy (ACME) PI Meeting, Albuquerque, NM, November 2–4, 2015. ([PDF](#))

IM20. **C. S. Zender**, [†]**P. Vicente**, and ^{*}**W. Wang** (2013): The Future of Model Evaluation. Presented to the Chapman University Symposium on Big Data and Analytics: 44th Symposium on the Interface of Computing Science and Statistics, Chapman University, Orange, CA, April 4–6, 2013. ([PDF](#))

IM19. **Zender, C. S.**, ^{***}**A. G. Krolewski**, ^{*}**M. G. Tosca**, and J. T. Randerson (2011): Tropical biomass burning smoke plumes: Insights from MISR. Presented to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 13–14, 2011. ([PDF](#))

IM18. **Zender, C. S.**, and ^{*}**M. G. Flanner** (2011): Climate Effects of Combustion and Dust Aerosols in Snow. Presented to the 2nd Annual Symposium on Climate Change, University of California, Riverside, April 30, 2011. (*Keynote*) ([PDF](#))

IM17. **Zender, C. S.**, and ^{*}**M. G. Flanner** (2010): Springtime Warming and Reduced Snow Cover from Carbonaceous Particles, Presented to the International Workshop “Frontiers of Black Carbon Studies”, Research Center for Advanced Science and Technology (RCAST), University of Tokyo, Tokyo, Japan, January 25, 2010. ([PDF](#))

IM16. **Zender, C. S.** (2009): Offshore Wind Power and Geoengineering: Why, Where, and How. Presented to the Taiwan-America Science and Technology Conference (TASTC) on Energy and Nanotechnology, Costa Mesa, CA, October 3, 2009. ([PDF](#))

IM15. **Zender, C. S.** (2009): Windblown Desert Dust: A Climate Wildcard. Presented to the Chinese Academy of Sciences (CAS) - Third World Academy of Sciences (TWAS) - World Meteorological Organization (WMO) Forum (CTWF) International Workshop on Mineral Aerosol and Impacts on Climate and Environment, Lanzhou University, Lanzhou, China, August 17–19, 2009. ([PDF](#))

- IM14. **Zender, C. S.**, F. Dominé, J.-C. Gallet, and G. Picard (2009): Darkening of Soot-doped Natural Snow: Measurements and Model. Presented to the International Workshop: Black Carbon in Snow—Sampling, Albedo Effects and Climate Impact, Norwegian Polar Institute, Tromsø, Norway, August 13–14, 2009. ([PDF](#))
- IM13. **Zender, C. S.** (2009): Windblown Desert Dust: A Climate Wildcard. Presented to the Fifteenth Annual German-American Kavli Frontiers of Science Symposium, U.S. National Academy of Sciences, Irvine, CA, June 5–7, 2009. ([Video](#), [PDF](#))
- IM12. **Zender, C. S.**, ***M. G. Flanner**, F. Dominé, and J. McConnell (2009): Dust and Soot Aerosol Effects on Snow and Climate. Presented to the 21st Session of the Global Energy and Water Cycle Experiment (GEWEX) Scientific Steering Group (SSG) Meeting, Irvine, California, January 19–23, 2009. ([PDF](#))
- IM11. **Zender, C. S.**, ***M. G. Flanner**, F. Dominé, and J. McConnell (2008): After the Fall: Consequences of combustion and dust aerosols in snow. Presented to the Tenth International Global Atmospheric Chemistry (IGAC) Conference, Annecy, France, September 7–12, 2008. (*Keynote*) ([Video](#), [PDF](#))
- IM10. **Zender, C. S.**, and ***M. G. Flanner** (2008): Dust-snow/ice interactions: a climate modulator on glacial timescales? Presented to the European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 13–18, 2008. ([PDF](#))
- IM9. **Zender, C. S.**, and ***M. G. Flanner** (2007): Snowpack-Mediated Aerosol-Climate Interactions. Presented to the Radiation and Climate Gordon Research Conference, Colby Sawyer College, New London, NH, July 30–August 3, 2007. ([PDF](#))
- IM8. **Zender, C. S.**, ***M. G. Flanner**, J. T. Randerson, N. Mahowald, P. J. Rasch, M. Yoshioka, T. H. Painter (2007): Dust-Snow/Ice Interactions: A Glacial Cycle Modulator or Trigger? Presented to the International Association of Meteorology and Atmospheric Sciences (IAMAS) Scientific Assembly, Symposium on the Mineral Dust Cycle and its Impact on Clouds and Radiation, Perugia, Italy, July 2–13, 2007. ([PDF](#))
- IM7. **Zender, C. S.**, ***M. G. Flanner**, J. T. Randerson, N. Mahowald, P. J. Rasch, M. Yoshioka, T. H. Painter (2006): Snowpack-Mediated Aerosol-Climate Interactions. Presented to the Global Warming and the Next Ice Age Conference, Santa Fe, NM, July 17–19, 2006. ([PDF](#))
- IM6. **Zender, C. S.** and ***E. Y. Kwon** (2005): Regional Contrasts in Soil Dust Emission Responses to Climate, Presented to the International Association of Meteorology and Atmospheric Sciences (IAMAS) Scientific Assembly, Beijing, China, August 2–11, 2005. ([PDF](#))
- IM5. **Zender, C. S.** (2005): What is a Model? Presented to the Buckminster Fuller Institute Spaceship Earth Design Workshop, California Institute for Telecommunications and Information Technology, University of California, Irvine, Irvine, CA, May 12, 2005. ([PDF](#))
- IM4. **Zender, C. S.** (2004): Opportunities for Dust & Loess Observations to Improve Models. Presented to the Mineral Dust Workshop, University of Colorado at Boulder, Boulder, CO, October 22–23, 2004. ([PDF](#))
- IM3. **Zender, C. S.** and R. L. Miller (2004): Natural and Anthropogenic Mineral Dust: Systematic Terminology and Current Mass Budget Estimates. Presented to Joint American Geophysical Union and Canadian Geophysical Union Spring Meeting, Montreal, Canada, May 17–21, 2004. ([PDF](#))

- IM2. **Zender, C. S.**, J. Famiglietti, F. Kuester, R. Pajarola, and F. Wessel (2004): Earth System Modeling Facility: Linking Climate to Cal-(IT)² and OptIPuter. Presented to the Third Cal-(IT)² All-hands Meeting, University of California at San Diego, La Jolla, CA, April 12, 2004. ([PDF](#))
- IM1. **Zender, C. S.** and [†]**H. Bian** (2004): Mineral dust aerosol and tropospheric ozone: Sensitivity to season, species, uptake rate, and chemical composition. Presented to the European Geosciences Union (EGU) Spring Meeting, Nice, France, April 26–30, 2004.

ACCEPTED PRESENTATIONS AT PROFESSIONAL MEETINGS & WORKSHOPS

(Presented by C. Zender unless noted) (**author** is/was in our group: ***high school, **undergraduate, *graduate student, [†]post-doc, [‡]researcher)

- CM156. ***Wang, W.**, and **C. S. Zender** (2018), Contributions of clouds to Greenland’s surface melt: multi-year observations from automatic weather stations. Presented by W. Wang to the European Geophysical Union General Assembly, Vienna, Austria, April 8–13, 2018. *Geophys. Res. Abstr.*, **12**, Abstract EGU2018-5609 ([PDF](#))
- CM155. Kuipers-Munneke, P., A. Luckman, S. Bevan, E. Gilbert, P. Smeets, M. van den Broeke, ***W. Wang**, **C. S. Zender**, B. Hubbard, A. Orr, and J. King (2018), Winter in Antarctica: dark, windy, and ...wet? The impact of present-day and future wintertime surface melting. Presented by P. Kuipers-Munneke to the European Geophysical Union General Assembly, Vienna, Austria, April 8–13, 2018. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract EGU2018-7838. ([PDF](#))
- CM154. **C. S. Zender** (2017), New Approaches to Analyze Big Geoscientific Datasets. Convener and Panelist. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.
- CM153. **C. S. Zender** and J. D. Silver (2017), Bit-Grooming: Shave Your Bits with Razor-sharp Precision. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract IN11B-0037. ([PDF](#))
- CM152. ***Wang, W.**, and **C. S. Zender** (2017), A stabilizing feedback between cloud radiative effects and Greenland surface melt: verification from multi-year automatic weather station measurements. Presented to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract A51E-2117 ([PDF](#))
- CM151. ***M. E. Gorris**, L. A. Cat, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2017), The influence of current and future climate on the spatial distribution of coccidioidomycosis in the southwestern United States. Presented by M. Gorris to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract GC-23E. ([PDF](#))
- CM150. E. R. Davis, **C. S. Zender**, D. Arctur, K. O’Brien, A. Jelenak, D. A. Santek, M. J. Dixon, T. Whiteaker, and K. Yang (2017), NetCDF-CF: Supporting Earth System Science with Data Storage, Analysis, and Visualization. Presented by E. Davis to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. ([PDF](#))

- CM149. Kuipers-Munneke, P., A. Luckman, S. Bevan, E. Gilbert, P. Smeets, M. van den Broeke, ***W. Wang**, **C. S. Zender**, B. Hubbard, A. Orr, and J. King (2017), Winter in Antarctica: dark, cold, windy, and ...wet? Observations of extensive wintertime surface melt confirmed by weather modelling. Presented by B. Hubbard to the American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017. *Eos Trans. AGU*, **97**(54), Fall Meet. Suppl., Abstract C51B-0982. ([PDF](#))
- CM148. **Zender, C. S.** (2017): CF2-Group: Draft Climate/Forecast Conventions for Hierarchical Data+Metadata. Presented to the Earth Science Data Systems Working Group (ESDSWG) Dataset Interoperability Working Group (DIWG). Online meeting, September 20, 2017. ([PDF](#))
- CM147. ***M. E. Gorris**, L. A. Cat, **C. S. Zender**, K. K. Treseder, and J. T. Randerson (2017), The Effects of Climate on Valley Fever Incidence in the Southwestern United States. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Fresno, CA, August 9, 2017. ([PDF](#))
- CM146. **C. S. Zender** (2017), New Methods to Generate, Regrid, and Split Climate Data. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) All-Hands Meeting, Potomac, MD, June 5–7, 2017. ([PDF](#))
- CM145. E. R. Davis, **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, M. Dixon, and T. Whiteaker (2017), NetCDF-CF: Supporting Earth System Science with Data Storage, Analysis, and Visualization. Presented by E. Davis to the EarthCube All-Hands Meeting, Seattle, WA, June 7–9, 2017. ([PDF](#))
- CM144. ****J. Mao**, D. LeBauer, and **C. S. Zender** (2017), The TERRA-REF Hyperspectral Imagery Workflow. Presented by J. Mao to the Phenome 2017 Conference, Tucson, AZ, February 10–14, 2017. ([PDF](#))
- CM143. ***M. E. Gorris**, L. A. Cat, J. T. Randerson, **C. S. Zender**, and K. K. Treseder (2017), The spatiotemporal relationship between climate and valley fever in the southwestern United States. Presented by M. Gorris to the 8th American Meteorological Society (AMS) 8th Conference on Environment and Health, Seattle, WA, January 22–26, 2017. ([PDF](#))
- CM142. **C. S. Zender** (2016), Death of Darkness: Artificial Sky Brightness in the Anthropocene. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 12–16, 2016. *Eos Trans. AGU*, **96**(54), Fall Meet. Suppl., Abstract OS31A-1744. ([PDF](#))
- CM141. ***W. Wang**, **C. S. Zender**, and D. van As (2016), Cloud-induced stabilization of Greenland surface melt. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 12–16, 2016. *Eos Trans. AGU*, **96**(54), Fall Meet. Suppl., Abstract AS31A-1744. ([PDF](#))
- CM140. **C. S. Zender** and J. D. Silver (2016), Bit Grooming: Put Climate Data on a Diet with Precision-Preserving Lossy Compression. Presented to the DOE Accelerated Climate Modeling for Energy (ACME) PI Meeting, Denver, CO, November 9–11, 2016. ([PDF](#))
- CM139. E. R. Davis, **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, K. M. O’Brien, and M. Dixon (2016), Advancing netCDF-CF for the Geoscience Community. Presented by E. Davis to the European Geosciences Union, Vienna, Austria, April 17–22, 2016. Abstract EGU2016-11351. ([PDF](#))
- CM138. ***M. E. Gorris**, L. A. Cat, J. T. Randerson, **C. S. Zender**, and K. K. Treseder (2016),

- Climate Drivers and Coccidioidomycosis Incidence at the Regional Scale. Presented by M. Gorris to the Cocci Study Group (CSG) Meeting, Fresno, CA, April 9, 2016. ([PDF](#))
- CM137. **C. S. Zender** (2016), Regrid Curvilinear, Rectangular, and Unstructured Data (CRUD) with ncremap, a new netCDF Operator. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. ([PDF](#))
- CM136. **C. S. Zender** and P. Leonard (2016), NASA ESDS Dataset Interoperability Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. ([PDF](#))
- CM135. **C. S. Zender**, P. Leonard, E. Armstrong, M. J. Brodzik, J. Glassy, A. Jelenak, S. J. S. Khalsa, W. Yang (2016), Guidelines for swath structures in Earth science products. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, April 6–8, 2016. ([PDF](#))
- CM134. E. R. Davis, **C. S. Zender**, D. Arctur, A. Jelenak, D. A. Santek, K. M. O’Brien, and M. Dixon (2016), Advancing netCDF-CF for the Geoscience Community. Presented by E. Davis to the 32nd American Meteorological Society (AMS) Conference on Environmental Information Processing Technologies New Orleans, LA, January 11–14, 2016. Abstract 13B.2. ([PDF](#))
- CM133. **C. S. Zender** (2015), Regrid Curvilinear, Rectangular, and Unstructured Data (CRUD) with ncremap, a new netCDF Operator. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2015. *Eos Trans. AGU*, **95**(54), Fall Meet. Suppl., Abstract IN31A-1744. ([PDF](#))
- CM132. ***W. Wang** and **C. S. Zender** (2015), Correcting Radiation Measured by Tilted Automatic Weather Stations: Application to Greenland. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2015. *Eos Trans. AGU*, **95**(54), Fall Meet. Suppl., Abstract C41B-0697. ([PDF](#))
- CM131. **C. S. Zender**, †**P. Vicente**, and ***W. Wang** (2015), Use netCDF Operators (NCO) to Improve Data Interoperability and Usability. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. ([PDF](#))
- CM130. **C. S. Zender** and P. Leonard (2015), NASA ESDS Dataset Interoperability Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. ([PDF](#))
- CM129. **C. S. Zender**, P. Leonard, E. Armstrong, S. Berrick, M. J. Brodzik, S. Doman Bennett, S. J. S. Khalsa, H. Lee, D. Marinelli, J. Plutchak, M. Yang, W. Yang (2015), Guidelines for creating grid structures in Earth science product files. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2015. ([PDF](#))
- CM128. ***W. Wang** and **C. S. Zender** (2014), Improving Estimates of Cloud Radiative Forcing over Greenland. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2014. *Eos Trans. AGU*, **94**(54), Fall Meet. Suppl., Abstract C21C-0375. ([PDF](#))
- CM127. Albani, S., N. M. Mahowald, A. T. Perry, R. A. Scanza, **C. S. Zender**, N. G. Heavens, V. Maggi, J. F. Kok, and B. L. Otto-Bliesner (2014), Dust impacts in different climates in the Community Earth System Model. Presented to Dust 2014: Interna-

- tional Conference on Atmospheric Dust, Castellaneta Marina, Italy, June 1–6, 2014. ([PDF](#))
- CM126. ****A. Miller** and **C. S. Zender** (2014), How much do diurnal land-sea circulations contribute to coastal wind power? Presented by A. Miller to the Northeast Regional Honors Council (NRHC), Niagara Falls, NY, April 3–6, 2014. ([PDF](#))
- CM125. **C. S. Zender** and P. Leonard (2014), NASA ESDS Conventions for HDF5 Working Group. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2014. ([PDF](#))
- CM124. **C. S. Zender**, [†]**P. Vicente**, and ^{*}**W. Wang** (2014), Simplifying and accelerating model evaluation by NASA satellite data. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, March 24–26, 2014. ([PDF](#))
- CM123. **C. S. Zender**, [†]**P. Vicente**, and ^{*}**W. Wang** (2013), Use Hierarchical Storage and Analysis to Exploit Intrinsic Parallelism. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract IN52A-06. ([PDF](#))
- CM122. ^{*}**W. Wang** and **C. S. Zender** (2013), Influence of low-level liquid-containing clouds on Greenland’s surface energy budget. Presented by W. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract C41A-0577. ([PDF](#))
- CM121. ****A. Miller** and **C. S. Zender** (2013), How much do diurnal land-sea circulations contribute to coastal wind power? Presented by A. Miller to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract ED43D-0795. ([PDF](#))
- CM120. Stephenson, S. R., S. J. Davis, **C. S. Zender**, and L. C. Smith (2013), Scenarios of 21st-century trans-Arctic shipping for climate studies, Presented by S. Stephenson to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract C43E-03. ([PDF](#))
- CM119. Scanza, R., N. M. Mahowald, S. J. Ghan, X. Liu, J. F. Kok, **C. S. Zender**, and Y. Zhang (2013), Dependence of Radiative Forcing on Mineralogy in the Community Atmosphere Model, Presented by R. Scanza to the American Geophysical Union Fall Meeting, San Francisco, CA, December 9–13, 2013. *Eos Trans. AGU*, **94**(53), Fall Meet. Suppl., Abstract A53J-05. ([PDF](#))
- CM118. **C. S. Zender**, [†]**P. Vicente**, and ^{*}**W. Wang** (2013), Simplifying and accelerating model evaluation by NASA satellite data, Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Greenbelt, MD, October 2–4, 2013. ([PDF](#))
- CM117. ****Miller, A.** and **C. S. Zender** (2013), Contribution of the Diurnal Sea Breeze to Wind Power Potential at Crystal Cove, Presented by A. Miller to the UCI ESS REU Symposium, University of California, Irvine, CA, August 14, 2013. ([PDF](#))
- CM116. **C. S. Zender**, [†]**P. Vicente**, and ^{*}**W. Wang** (2012), NCO: Simpler and faster model evaluation by NASA satellite data via unified file-level netCDF and HDF-EOS data post-processing tools. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 3–7, 2012. *Eos Trans. AGU*, **93**(53), Fall Meet. Suppl., Abstract IN34A-07. ([PDF](#))
- CM115. [†]**Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2012), Recent Northern Hemisphere Tropical Expansion Primarily Driven by Black Carbon and Tro-

ospheric Ozone. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 3–7, 2012. *Eos Trans. AGU*, **93**(53), Fall Meet. Suppl., Abstract A53X-08. ([PDF](#))

- CM114. **C. S. Zender**, †**P. Vicente**, and ***W. Wang** (2012), Simplifying and accelerating model evaluation by NASA satellite data. Presented to the Earth Science Data Systems Working Group (ESDSWG) Meeting, Annapolis, MD, November 13–15, 2012. ([PDF](#))
- CM113. Bond, T. C., and 30 co-authors including **C. S. Zender** (2012), Bounding the role of black carbon in climate: A scientific assessment. Presented by T. C. Bond to the Twelfth International Global Atmospheric Chemistry (IGAC) Conference, Beijing, China, September 17–21, 2012. ([PDF](#))
- CM112. ****Serino, M.** and **C. S. Zender** (2012), Quantifying Diurnal and Seasonal Wind Power at Crystal Cove. Presented by M. Serino to the UCI ESS REU Symposium, University of California, Irvine, CA, August 14, 2012. ([PDF](#))
- CM111. **Zender, C. S.** (2012), Benefits of Bringing the Environment to the Classroom. Presented to the Climate, Literacy Empowerment And iNquiry (CLEAN) Education Science Communication and Outreach Workshop “K-to-Gray: Communicating Science to Students of All Ages”, University of California, Irvine, January 30, 2012. ([PDF](#))
- CM110. **Zender, C. S.**, *****A. G. Krolewski**, ***M. G. Tosca**, and J. T. Randerson (2011), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo. Presented to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 13–14, 2011. ([PDF](#))
- CM109. ***M. G. Tosca**, **C. S. Zender** and J. T. Randerson (2011), Constraining modeled fire AOD using remote sensing products and quantifying the global climate response to smoke aerosol emissions. Presented by M. Tosca to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 13–14, 2011. ([PDF](#))
- CM108. *****Krolewski, A.**, **C. S. Zender**, ***M. G. Tosca**, and J. T. Randerson (2011), Tropical biomass burning smoke plume size, shape, reflectance, and age based on 2001–2009 MISR imagery of Borneo. Presented by A. Krolewski to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract GC23C-0957. ([PDF](#))
- CM107. †**Allen, R. J.**, S. C. Sherwood, J. R. Norris, and **C. S. Zender** (2011), The Equilibrium Response to Idealized Thermal Forcings in a Comprehensive GCM: Implications for Recent Tropical Expansion. Presented by R. J. Allen to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract A11F-0147. ([PDF](#))
- CM106. ***M. G. Tosca**, J. T. Randerson, and **C. S. Zender** (2011), Quantification of regional radiative impacts and climate effects of tropical fire aerosols. Presented by M. Tosca to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2011. *Eos Trans. AGU*, **92**(53), Fall Meet. Suppl., Abstract GC21E-02. ([PDF](#))
- CM105. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender** (2011), Simulating the climate impacts of fire using a global climate model. Presented by M. Tosca to the NASA Carbon Cycle & Ecosystems Workshop, Washington, DC, October 3, 2011. ([PDF](#))
- CM104. Yasunari, T. J., R. D. Koster, M. Suarez, K.-M. Lau, S. P. P. Mahanama, T. Aoki, P. R. Colarco, A. M. da Silva, K.-M. Kim, Y. C. Sud, M. G. Flanner, C. S. Zender, T. Yamazaki, H. Motoyoshi, and Y. Kodama (2011), Snow albedo and snow impuri-

- ties. Presented by T. J. Yasunari to the NASA GEOS-5 AGCM MAP Investigator Workshop, NASA/GSFC, Greenbelt, MD, June 2011.
- CM103. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender** (2011), Feedbacks between Fire and ENSO: Scaling emissions and developing a semi-prognostic fire module for CAM5. Presented by M. Tosca to the 16th Annual CESM Workshop, Breckenridge, CO, June 18–20, 2011. ([PDF](#))
- CM102. **Zender, C. S.**, and ***Q. Han** (2010), The Global Distributions of Desert Dust Age in the Atmosphere and at Deposition. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 13–17, 2010. *Eos Trans. AGU*, **91**(53), Fall Meet. Suppl., Abstract A11K-03. ([PDF](#))
- CM101. †**Allen, R. J.**, and **C. S. Zender** (2010), The Effects of Continental-Scale Snow Albedo Anomalies on the Wintertime Arctic Oscillation. Presented by R. J. Allen to the American Geophysical Union Fall Meeting, San Francisco, CA, December 13–17, 2010. *Eos Trans. AGU*, **91**(53), Fall Meet. Suppl., Abstract A41D-0118. ([PDF](#))
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- CM99. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, D. L. Nelson, D. J. Diner (2010), Characterization of Indonesian smoke plumes during El Niño and La Niña. Presented by M. Tosca to the MISR Data Users Science Symposium, Pasadena, CA, December 9–10, 2010. ([PDF](#))
- CM98. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, ***M. G. Flanner**, D. L. Nelson, D. J. Diner, P. J. Rasch, J. A. Logan (2010), Characteristics of Borneo and Sumatra fire plumes and smoke clouds and their impact on regional El Niño-induced drought. Presented by M. Tosca to the European Geosciences Union General Assembly, Vienna, Austria, May 3–7, 2010. *Geophys. Res. Abstr.*, **12**, Abstract EGU2010-14852. ([PDF](#))
- CM97. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender** (2010): Characteristics of fire plume heights and smoke clouds on Borneo and Sumatra. Presented by M. Tosca to the NASA LCLUC Spring Team Meeting, Bethesda, MD, April 22, 2010. ([PDF](#))
- CM96. †**Allen, R. J.** and **C. S. Zender** (2009): Investigating the effects of Eurasian snow cover on winter climate. Presented by R. J. Allen to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2009. *Eos Trans. AGU*, **90**(53), Fall Meet. Suppl., Abstract A31A-0079. ([PDF](#))
- CM95. †**Wang, X.** and **C. S. Zender** (2009): MODIS snow albedo bias at high solar zenith angles relative to theory and to *in situ* observations in Greenland. Presented by X. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2009. *Eos Trans. AGU*, **90**(53), Fall Meet. Suppl., Abstract C31C-0450. ([PDF](#))
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- CM93. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, D. L. Nelson, D. J. Diner (2009):

- Characterization of Indonesian smoke plumes during El Niño and La Niña. Presented by M. Tosca to the MISR Data Users Science Symposium, Pasadena, CA, December 10–11, 2009. ([PDF](#))
- CM92. ***Han, Q.**, and **C. S. Zender** (2009): Aerosol Tracer Age: The Explicit Lifetime Tracking Method Applied to Dust. Presented by Q. Han to the 14th Annual CCSM Workshop, Breckenridge, CO, June 15–18, 2009. ([PDF](#))
- CM91. ***Capps, S. B.** and **C. S. Zender** (2009), Global Ocean Wind Power Sensitivity to Turbine Characteristics and Siting. Presented by S. Capps to the Renewable Energy Center of the Desert Research Institute, Reno, NV, June 10, 2009. ([PDF](#))
- CM90. ***Capps, S. B.** and **C. S. Zender** (2009), Surface Wind Speed Distributions: Implications for Climate and Wind Power. Presented by S. Capps to the Climate, Oceans, and Solid Earth Science Section of the Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, January 28, 2009. ([PDF](#))
- CM89. **Zender, C. S.**, J.-C. Gallet, F. Dominé, and M. Flanner (2008): Albedo reduction by dirty snow: measurements and implications. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract C41C-0535. ([PDF](#))
- CM88. Ghan, S., X. Liu, R. Easter, R. Zaveri, H. Morrison, A. Gettelman, J. Lamarque, P. Rasch, A. Conley, F. Vitt, P. Cameron-Smith, C. Chuang, P. Hess, N. Mahowald, A. Ekman, **C. S. Zender**, K. Grant (2008): Toward a Minimal Representation of Aerosol Direct and Indirect Effects, Presented by S. Ghan to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract A31H-07. ([PDF](#))
- CM87. Krishnamurthy, A., J. K. Moore, N. M. Mahowald, †**C. Luo**, S. C. Doney, K. Lindsay, and **C. S. Zender** (2008): The Impacts of Increasing Soluble Iron and Nitrogen Deposition on Ocean Biogeochemistry. Presented by A. Krishnamurthy to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract OS14B-07. ([PDF](#))
- CM86. ***Capps, S. B.** and **C. S. Zender** (2008): Assessing offshore 80 m height wind power using QuikSCAT 10 m winds. Presented by S. Capps to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract A21E-0248. ([PDF](#))
- CM85. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, D. Nelson, D. Diner, and ***M. G. Flanner** (2008): Tropical fire emissions injection heights and their impact on climate. Presented by M. Tosca to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract B31E-0345. ([PDF](#))
- CM84. ***Han, Q.**, **C. S. Zender**, and J. K. Moore (2008): Estimation of Fe and Al aerosol solubility from a diffusive method based on particle size. Presented by Q. Han to the American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008. *Eos Trans. AGU*, **89**(53), Fall Meet. Suppl., Abstract OS23E-1295. ([PDF](#))
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- CM82. ***Tosca, M. G.**, J. T. Randerson, **C. S. Zender**, D. Nelson, D. Diner, and ***M. G. Flanner** (2008): Do biomass burning aerosols intensify drought in equatorial Asia during El Niño? Presented by M. Tosca to the Marie Curie Action and IGBP iLEAPS (Integrated Land Ecosystem-Atmosphere Processes Study) Feedbacks and Land-Climate Dynamics Conference, Hyeres, France, November 16–20, 2008. ([PDF](#))
- CM81. J.-C. Gallet, F. Dominé, **C. S. Zender**, and G. Picard (2008): Determining the specific surface area of snow by IR reflectance by using an integrating sphere and two wavelengths. Presented by J.-C. Gallet to the Tenth International Global Atmospheric Chemistry (IGAC) Conference, Annecy, France, September 7–12, 2008. ([PDF](#))
- CM80. ***Flanner, M. G.** and **C. S. Zender** (2008): Snow-albedo feedback triggered by carbonaceous particles. Presented by M. Flanner to the 9th International Conference on Carbonaceous Particles in the Atmosphere (ICCPA), Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA, August 12–14, 2008.
- CM79. ***Capps, S. B.** and **C. S. Zender** (2008), Sub-Gridscale Wind Speed Variability and Climate. Presented by S. Capps to the PIMS Summer School on Stochastic and Probabilistic Methods for Atmosphere, Ocean, and Climate Dynamics, University of Victoria, BC, Canada, July 14–18, 2008. ([PDF](#))
- CM78. ***Flanner, M. G.** and **C. S. Zender** (2008): The influence of snow darkening on recent snow cover trends. Presented by M. Flanner to the Physical Sciences Division (PSD) of the Earth System Research Laboratory (ESRL), National Oceanic and Atmospheric Administration (NOAA), Boulder CO, May 21, 2008.
- CM77. ***Capps, S. B.** and **C. S. Zender** (2008), Using QuikSCAT Surface Wind Measurements to Understand Wind Speed Variability and Surface Flux Implications. Presented by S. Capps to the American Society of Limnology and Oceanography 2008 Ocean Sciences Meeting, Orlando, FL, March 2–7, 2008. ([PDF](#))
- CM76. ***Capps, S. B.** and **C. S. Zender** (2008), Sub-Gridscale Wind Speed Variability and Climate. Presented by S. Capps to the Les Houches Summer School Session on Atmospheric Boundary Layers: Concepts, Observations, and Numerical Simulations, École de Physique, Les Houches, France, June 17–27, 2008. ([PDF](#))
- CM75. ***Wang, D. L.**, **C. S. Zender**, and S. F. Jenks (2008), Cluster Workflow Execution of Retargeted Data Analysis Scripts. Presented by D. Wang to the 8th IEEE International Symposium on Cluster Computing and the Grid (CCGRID '08), Lyon, France, 19–22 May, 2008. ([PDF](#))
- CM74. **Zender, C. S.**, J.-C. Gallet, F. Dominé, and M. Flanner (2008): Albedo reduction by soot-contaminated snow: measurements and implications. Presented to the European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 13–18, 2008. ([PDF](#))
- CM73. J.-C. Gallet, F. Dominé, and **C. S. Zender** (2008): The accurate determination of the specific surface area of snow by IR reflectance. Presented by F. Dominé to the European Geosciences Union (EGU) General Assembly, Vienna, Austria, April 13–18, 2008. ([PDF](#))
- CM72. F. Dominé, M. Bisiaux, J.-C. Gallet, and **C. S. Zender** (2008): Impact of the heat conductivity of snow on permafrost extent. Presented by F. Dominé to the European Geosciences Union (EGU) Spring Meeting, Vienna, Austria, April 13–18, 2008. ([PDF](#))
- CM71. J.-C. Gallet, F. Dominé, and **C. S. Zender** (2008), Optical Measurement of Snow

- Specific Surface Area (Mesure de la Surface Spécifique de la Neige par Méthode Optique), Presented by J.-C. Gallet to the 12th Alpine Glaciological Meeting Chamonix, France, March 6–7, 2008. ([PDF](#))
- CM70. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), A System for Scripted Data Analysis at Remote Data Centers. Presented by D. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2007. *Eos Trans. AGU*, **88**(52), Fall Meet. Suppl., Abstract IN11B-0469. ([PDF](#))
- CM69. ***Tosca, M. G., *M. G. Flanner**, P. J. Rasch, J. T. Randerson, and **C. S. Zender** (2007), Biomass Burning Aerosols Reduce Precipitation in equatorial SouthEast Asia during El Niño, Presented by M. Tosca to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2007. *Eos Trans. AGU*, **88**(52), Fall Meet. Suppl., Abstract A33E-1640. ([PDF](#))
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- CM67. ***Tosca, M. G., *M. G. Flanner**, P. J. Rasch, J. T. Randerson, and **C. S. Zender** (2007), Biomass Burning Aerosol Optical Depth is Under-predicted by CCSM, Presented by M. Tosca to the MISR Data Users Science Symposium, Jet Propulsion Laboratory, Pasadena, CA, December 6–7, 2007. ([PDF](#))
- CM66. McConnell, J. R., R. Edwards, G. L. Kok, ***M. G. Flanner, C. S. Zender**, E. Saltzman, J. R. Banta, D. R. Pasteris, M. M. Carter, and J. D. Kahl, Concentrations and Sources of Soot in Greenland Precipitation from 1788 to 2002: Implications for Radiative Forcing, Presented by J. McConnell to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2007. *Eos Trans. AGU*, **88**(52), Fall Meet. Suppl., Abstract A44B-01.
- CM65. ***Flanner, M. G. and C. S. Zender** (2007), Black Carbon in Snow: Role in Arctic Climate, Uncertainties, and Future Scenarios. Presented by M. Flanner to the Short-lived Pollutants and Arctic Climate (SPAC) workshop hosted by the Norwegian Institute for Air Research (NILU), Oslo, Norway, November 8–9, 2007. ([PDF](#))
- CM64. ***Capps, S. B. and C. S. Zender** (2007), Using QuikSCAT-derived surface winds and a GCM to improve predicted wind speed variability and ocean surface fluxes. Presented by S. Capps to the 15th American Meteorological Society (AMS) Conference on Air-Sea Interaction, Portland, OR, August 20–23, 2007. ([PDF](#))
- CM63. **Zender, C. S., *M. G. Flanner**, J. T. Randerson, N. Mahowald, P. J. Rasch, M. Yoshioka, T. H. Painter, J. R. McConnell, and P. R. Edwards (2007): Present, Past, and Future Climate Effects and Efficacy of Dirty Snow. Presented to the International Association of Meteorology and Atmospheric Sciences (IAMAS) Scientific Assembly, Symposium on Earth System Interactions, Perugia, Italy, July 2–13, 2007. ([PDF](#))
- CM62. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), Server-side Parallel Data Reduction and Analysis. Presented by D. Wang to the Second International Conference on Grid and Pervasive Computing (GPC), Paris, France, May 2–4, 2007. ([PDF](#))
- CM61. ***Flanner, M. G. and C. S. Zender** (2007), Snow Aging, Black Carbon, and Implications for Climate Change. Presented by M. Flanner to the Department of Civil

and Environmental Engineering, University of California, Los Angeles, Los Angeles, California, March 6, 2007.

- CM60. ***Flanner, M. G.** and **C. S. Zender** (2007), Snow Solar Radiative Treatment in the Community Land Model (CLM). Presented by M. Flanner to the Land Model Working Group meeting at the National Center for Atmospheric Research, Boulder, CO, February 27–28, 2007.
- CM59. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), Server-side Data Reduction and Analysis with Script Workflow Analysis for Multi-Processing. Presented by D. Wang to the OPeNDAP Developer’s Workshop, Boulder, CO, February 21–23, 2007. ([PDF](#))
- CM58. ***Capps, S. B.** and **C. S. Zender** (2007), Comparing CAM3 Surface Winds With Observed 10-m Surface Winds (SeaWinds). Presented by S. Capps to the Atmospheric Model Working Group meeting at the National Center for Atmospheric Research, Boulder, CO, January 29–31, 2007. ([PDF](#))
- CM57. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2007), Server-side Data Reduction and Analysis with Script Workflow Analysis for Multi-Processing. Presented by D. Wang to the 23rd AMS Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology, San Antonio, TX, January 14–18, 2007. ([PDF](#))
- CM56. **Zender, C. S.**, and ***D. L. Wang** (2007): High performance distributed data reduction and analysis with the netCDF Operators (NCO). Presented to the 23rd AMS Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology, San Antonio, TX, January 14–18, 2007. ([PDF](#))
- CM55. **Zender, C. S.**, J. Talamantes, and S. Behseta (2007): Does Climate Control Valley Fever Incidence in California? Presented to the 16th AMS Conference on Applied Climatology, San Antonio, TX, January 14–18, 2007. ([PDF](#))
- CM54. ***Flanner, M. G.** and **C. S. Zender** (2007), Modeling Climate Effects of Black Carbon in Snow. Presented by M. Flanner to the Clean Air Task Force (CATF) Arctic Climate Impacts workshop at the NASA Goddard Institute for Space Studies, New York, NY, January 8–9, 2007.
- CM53. ***Han, Q.**, J. K. Moore, **C. S. Zender**, and C. I. Measures (2006): Constraining Oceanic Dust Deposition Using Surface Ocean Dissolved Al. Presented by Q. Han to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2006. *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract OS32B-06. ([PDF](#))
- CM52. ***Flanner, M. G.**, **C. S. Zender**, J. T. Randerson, P. J. Rasch, and P. S. Kasibhatla (2006): Present Day Climate Forcing and Response from Black Carbon in Snow. Presented by M. Flanner to the American Geophysical Union Fall Meeting, San Francisco, CA, December 11–15, 2006. *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract A34C-02. ([PDF](#))
- CM51. **Zender, C. S.**, ***M. G. Flanner**, J. T. Randerson, N. Mahowald, P. J. Rasch, M. Yoshioka, T. H. Painter (2006): Climate Effects and Efficacy of Dust and Soot in Snow. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2006. *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract A32C-07. ([PDF](#))
- CM50. **Zender, C. S.**, †**H. J. Mangalam**, and ***D. L. Wang** (2006): Improving Scaling Properties of Common Statistical Operators for Gridded Geoscience Datasets. Pre-

- sented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2006. *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract IN53B-0827. ([PDF](#))
- CM49. ***Wang, D. L., C. S. Zender**, and S. F. Jenks (2006): Server-side netCDF Data Reduction and Analysis. Presented by D. Wang to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2006. *Eos Trans. AGU*, **87**(52), Fall Meet. Suppl., Abstract IN53B-0826. ([PDF](#))
- CM48. Talamantes, J., S. Behseta, and **C. S. Zender** (2006): Statistical Modeling Of Valley Fever Data in Kern County, California. Presented by J. Talamantes to the Sixth International Symposium on Coccidioidomycosis, Stanford University, Stanford, CA, August 23–27, 2006. ([PDF](#))
- CM47. ***Flanner, M., C. S. Zender**, J. T. Randerson, and P. J. Rasch (2006): Present Day Climate Forcing and Response from Black Carbon in Snow. Presented by M. Flanner to the 11th Annual CCSM Workshop, Breckenridge, CO, June 20–22, 2006. ([PDF](#))
- CM46. Krishnamurthy, A., J. K. Moore, [‡]**C. Luo**, and **C. S. Zender** (2006): The Effects of Atmospheric Inorganic Nitrogen Deposition on Ocean Biogeochemistry. Presented by A. Krishnamurthy to the 11th Annual CCSM Workshop, Breckenridge, CO, June 20–22, 2006. ([PDF](#))
- CM45. Randerson, J. T., H. Liu, ***M. G. Flanner**, S. D. Chambers, J. W. Harden, P. G. Hess, Y. Jin, M. C. Mack, G. Pfister, E. A. Schuur, K. K. Treseder, L. R. Welp, and **C. S. Zender** (2005): Boreal Forest Fire Cools Climate. Presented by J. Randerson to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract B42B-03.
- CM44. Knox, C. J., ****M. Brown**, K. Doerr, S. Jenks, **C. S. Zender**, and F. Kuester (2005): Simultaneous Visualization of the IPCC AR4 Model Ensemble on an Extremely High Resolution Display Wall (HIPerWall). Presented by C. Knox to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract IN31A-1140.
- CM43. Yoshioka, M., N. Mahowald, A. Conley, D. W. Fillmore, W. D. Collins, **C. S. Zender** (2005): Impact of Desert Dust Radiative Forcing on Sahel Precipitation. Presented by M. Yoshioka to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract P13B-0157.
- CM42. Mahowald, N., D. Muhs, S. Levis, M. Yoshioka, P. J. Rasch, **C. S. Zender**, G. Okin, and T. H. Painter (2005): Deposition Changes in the Past And The Future. Presented by N. Mahowald to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract B34B-03.
- CM41. ***Flanner, M. G.**, and **C. S. Zender** (2005): Snowpack Radiative Heating: Influence on Tibetan Plateau Climate. Presented by M. Flanner to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract C12A-07. ([PDF](#))
- CM40. ***Flanner, M. G., C. S. Zender**, J. T. Randerson, Y. Jin, and P. J. Rasch (2005): Dirty Snow, Atmospheric Warming, and Climate Feedbacks from Boreal Carbon Aerosol Emissions. Presented by M. Flanner to the American Geophysical Union Fall Meeting, San Francisco, CA, December 5–9, 2005. *Eos Trans. AGU*, **86**(52), Fall Meet. Suppl., Abstract A31C-05. ([PDF](#))

- CM39. ****Brown, M. and C. S. Zender** (2005): Distributed Data Reduction Techniques Applied to California Climate Change. Presented by M. Brown to the Summer Undergraduate Research Fellows in Information Technology (SURF-IT) program, California Institute for Telecommunications and Information Technology, University of California, Irvine, Irvine, CA, September 2, 2005. ([PDF](#))
- CM38. ***Flanner, M. G. and C. S. Zender** (2004): Climate Sensitivity to Realistic Solar Heating of Snow and Ice. Presented by M. Flanner to the American Geophysical Union Fall Meeting, San Francisco, CA, December 13–17, 2004. ([PDF](#))
- CM37. ***Flanner, M. G. and C. S. Zender** (2004): Snowpack Radiative Heating: Effect on Snow Depth and Surface Reflectance. Presented by M. Flanner to the Workshop on EOS Snow and Ice Products, Raytheon Building, Landover, MD, November 16–17, 2004. ([PDF](#))
- CM36. **Zender, C. S., *S. Bortz,** and R. Arimoto (2003): Detection of the geographic distribution of source soil mineralogy in long range transported aerosol from Ca measurements and simulations in the Dust Entrainment And Deposition (DEAD) model. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 8–12, 2003.
- CM35. **†Bian, H. and C. S. Zender** (2003): Global Ammonium Aerosol Chemistry and Distribution: Relationship to Sulfate, Nitrate, Seasalt, and Dust Aerosols. Presented to the 22nd American Association of Aerosol Research (AAAR) Conference, Anaheim, CA, October 20–24, 2003. ([PDF](#))
- CM34. ***Grini, A., and C. S. Zender** (2003): Impact of different dust production mechanisms on downwind dust size distributions. Presented by A. Grini to the Second International Workshop on Mineral Dust, Paris, France, September 10–12, 2003. ([PDF](#))
- CM33. **Zender, C. S., and J. Talamantes** (2003): Environmental factors controlling valley fever incidence in Kern County, California, USA. Presented to the Second International Workshop on Mineral Dust, Paris, France, September 10–12, 2003. ([PDF](#))
- CM32. **Zender, C. S., *M. G. Flanner,** and J. Adams (2003): LGM dust distribution and radiative forcing: Sensitivity to vegetation reconstruction. Presented to the XVI International Quaternary Association (INQUA) Congress, Reno, Nevada, July 23–30, 2003. ([PDF](#))
- CM31. Sweeney, M. R., A. J. Busacca, D. R. Gaylord and **C. S. Zender** (2002): Provenance of Palouse loess related to late quaternary glacial outburst flooding in the Pacific Northwest. Presented by M. Sweeney to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2002.
- CM30. **Zender, C. S., †D. J. Newman,** and O. Torres (2002): Spatial Heterogeneity in Aeolian Erodibility: Uniform, Topographic, Geomorphic, and Hydrologic Hypotheses. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2002. ([PDF](#))
- CM29. **†Bian, H., and C. S. Zender** (2002): Mineral dust and global tropospheric chemistry: Relative roles of photolysis and heterogeneous uptake. Presented by H. Bian to the American Geophysical Union Fall Meeting, San Francisco, CA, December 10–14, 2002.
- CM28. **Zender, C. S., and †D. J. Newman** (2002): Spatial Heterogeneity in Global Soil Aeolian Erodibility: Dependence on Regional Topography, Geomorphology, and Hydrology. Presented to the Fifth International Conference on Aeolian Research (ICAR5)

- and Global Change & Terrestrial Ecosystem-Soil Erosion Network (GCTE-SEN) joint meeting, Lubbock, TX, July 22–25, 2002.
- CM27. **Zender, C. S.** (2002), Forcing and Feedback of Mineral Dust Aerosol in the NCAR CCSM. Presented at the Seventh Annual Community Climate System Model Workshop, Breckenridge, CO, June 25–27, 2002.
- CM26. Mahowald, N., C. Luo, **C. S. Zender**, and J. del Corral (2002): Interannual variability in mineral aerosol deposition to ocean regions from a 1979–2001 simulation. Presented by N. Mahowald to the Annual Meeting of the European Geophysical Society (EGS), Nice, France, April 21–26, 2002.
- CM25. Yu, S., **C. S. Zender**, and V. K. Saxena (2001): Direct radiative forcing and atmospheric absorption by boundary layer aerosol in the southeastern US: model estimates on the basis of new observations. Presented to the Chapman Conference on Solar Radiation, Estes Park, CO, August 13–17, 2001.
- CM24. Mahowald, N., C. Luo, and **C. S. Zender** (2001): Decadal Variability in Mineral Aerosols. Presented by N. Mahowald to the Eighth Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), Innsbruck, Austria, July 10–18, 2001.
- CM23. Ammann, C. M., J. T. Kiehl, B. L. Otto-Bliesner, **C. S. Zender**, and Raymond S. Bradley (2001): External forcing and 20th century climate in the CSM. Presented by C. Ammann to the Sixth Annual Community Climate System Model Workshop, Breckenridge, CO, June 25–27, 2001.
- CM22. Ammann, C. M., J. T. Kiehl, B. L. Otto-Bliesner, and **C. S. Zender** (2000): Contribution of Explosive Volcanism to the Global Warming Attribution in the 20th Century. Presented by C. Ammann to the Fall Meeting of the American Geophysical Union, San Francisco, CA, December 14–18, 2000.
- CM21. **Zender, C. S.** (2000), Implications of the Size-Resolved Distribution of African Mineral Dust Over the Tropical North Atlantic. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 14–18, 2000.
- CM20. Yu, S., **C. S. Zender**, and V. K. Saxena (2000): Aerosol direct radiative forcing in the southeastern US: estimates from measurement and model results. Presented by S. Yu to the 7th International Conference on Atmospheric Science and Applications to Air Quality (ASAAQ) Conference, Taipei, Taiwan, China, October 30–November 2, 2000.
- CM19. **Zender, C. S.** (2000): Mineral Dust Variability over the N. Atlantic and Indian Oceans. Presented at the Fifth Annual Community Climate System Model Workshop, Breckenridge, CO, June 27–29, 2000.
- CM18. Collins, W. D., P. J. Rasch, B. E. Eaton, D. W. Fillmore, J. T. Kiehl, and **C. S. Zender** (2000): Simulation of Regional Aerosol Distributions and Radiative Forcing for INDOEX. Presented by W. Collins to the XXV General Assembly, European Geophysical Society (EGS), Nice, France, April 25–29, 2000. EGS Newsletter, vol. 74, p. 189.
- CM17. **Zender, C. S.** (2000): Mineral Dust Aerosol over the N. Atlantic and Indian Oceans: Simulations, Evaluations, and links to Biogeochemistry. Presented to the NCAR Biogeochemistry Working Group Meeting, Boulder, CO, March 28–29, 2000.
- CM16. Collins, W. D., P. J. Rasch, D. W. Fillmore, **C. S. Zender**, J. T. Kiehl, and B. E. Eaton (2000): Direct radiative forcing and heating during INDOEX: Results from an

- aerosol analysis with assimilation. Presented by W. Collins to Fall Meeting of the American Geophysical Union. *Eos Trans. AGU*, vol. **80**(46), p. F183, 2000.
- CM15. **Zender, C. S.** (1999): Mineral Dust Shortwave Radiative Forcing. Presented to the Workshop on Mineral Dust, Boulder, CO, June 9–11, 1999.
- CM14. **Zender, C. S.** (1998): Tropospheric Mineral Dust: Observations and Implications. Presented to the Third Annual Climate System Model Workshop, Breckenridge, CO, June 22–24, 1998.
- CM13. **Zender, C. S.** (1998): O₂·O₂ and O₂·N₂: Climatological Abundance, Forcing, and Response. Presented to the Third Annual Climate System Model Workshop, Breckenridge, CO, June 22–24, 1998.
- CM12. **Zender, C. S.** (1998): O₂·O₂, O₂·N₂, and (H₂O)₂: Climatological Abundance, Forcing, and Response. Presented to the Gordon Research Conference on Solar Radiation and Climate, Plymouth, NH, June 15–18, 1998.
- CM11. **Zender, C. S.** and P. Chýlek (1998): A global climatology of O₂·O₂, O₂·N₂, and (H₂O)₂ abundance and absorption. Presented to the Eighth Atmospheric Radiation Measurement (ARM) Science Team Meeting, Tucson, AZ, March 23–27, 1998.
- CM10. **Zender, C. S.** (1998): Dust in the NCAR CSM: links to paleoclimate. Presented to the 1998 CSM Paleoclimate Working Group Meeting, Boulder, CO, February 17–18, 1998.
- CM9. **Zender, C. S.** (1997): The simulation of the global dust distribution in the NCAR CCM3. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 8–12, 1997.
- CM8. **Zender, C. S.**, B. Bush, S. K. Pope, A. Bucholtz, W. D. Collins, J. T. Kiehl, F. P. J. Valero, and J. Vitko, Jr. (1997): Atmospheric absorption during ARESE. presented to the Seventh Atmospheric Radiation Measurement (ARM) Science Team Meeting, San Antonio, TX, March 3–7, 1997.
- CM7. **Zender, C. S.** and J. T. Kiehl (1997): Tropical climate sensitivity to representation of cirrus anvil lifecycle. *Proceedings of the Ninth AMS Conference on Atmospheric Radiation*, pp. 111–114, American Meteorological Society Annual Meeting, Long Beach, CA, February 2–5, 1997
- CM6. **Zender, C. S.**, and J. T. Kiehl (1996): Climate sensitivity to tropical anvil representation. Presented to the Summer Workshop on Climate Modeling, Center for Clouds, Chemistry, and Climate, Scripps Institute of Oceanography, San Diego, CA, July 1996.
- CM5. **Zender, C. S.**, and J. T. Kiehl (1995): Parameterization of Anvil Clouds in the NCAR GCM. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 11–15, 1995.
- CM4. **Zender, C. S.**, and J. T. Kiehl (1995): Parameterization of Anvil Clouds in the NCAR GCM. Presented to the Cloud Modeling and Measurement Workshop, NOAA ERL, Boulder, CO, October 23–25, 1995.
- CM3. Kiehl, J. T., and **C. S. Zender** (1995): A prognostic ice water scheme for anvil clouds. Presented by J. T. Kiehl. In: *Proceedings of the Workshop on Cloud Microphysics Parameterizations in Global Atmospheric Circulation Models*, pp. 167–188, World Meteorological Organization, WCRP-90, WMO/TD-No. 713, Kananaskis, Alberta, Canada, May 23–25 1995.
- CM2. **Zender, C. S.**, and J. T. Kiehl (1994): The radiative influence of crystal habit and size

in tropical anvils. In: *Proceedings of the Eighth AMS Conference on Atmospheric Radiation*, pp. 561–563, American Meteorological Society Annual Meeting, Nashville, TN, January 24–28, 1994.

- CM1. **Zender, C. S.**, and J. T. Kiehl (1993): Sensitivity of Modeled Cirrus Radiative Properties to Small Ice Crystals. Presented to the American Geophysical Union Fall Meeting, San Francisco, CA, December 6–10, 1993.

THESIS ADVISOR AND POSTGRADUATE SCHOLAR SPONSOR

1. Chair or Co-Chair of Thesis Committee: Dr. Scott Capps 3/05–11/09 (UCI, now CEO, Atmospheric Data Solutions), Ms. Erin Delman 12/15–present (UCI), Dr. Mark Flanner 3/03–6/07 (UCI, now professor at U. Mich.), Ms. Morgan Gorris 9/14–present (UCI), Dr. Alf Grini 1/02–2/04 (U. Oslo, now researcher at U. Oslo CICERO), Dr. Qin Han 3/05–12/10 (UCI, whereabouts unknown), Mr. Matthew Laffin 9/17–present (UCI), Dr. Michael (Mick, Mika) Tosca 7/06–3/12 (UCI, now professor at Art Institute of Chicago), Dr. Daniel Wang 10/05–11/08 (UCI, now researcher at SLAC), Dr. Wenshan Wang 8/12–12/17 (UCI, now postdoc at UCI), Mr. Zachary Wolff 9/16–present (UCI)
2. Member of Thesis Committee: Dr. Ann Bardin 4/10–8/14 (UCI, now postdoc at UCI), Dr. Aaron Berg 12/01–8/03 (UCI, now professor at U. Guelph), Dr. Huisheng Bian 8/00–9/01 (UCI, now researcher at NASA GSFC), Dr. Rick Hansell 9/05–12/07 (UCLA, now researcher at NASA GSFC), Dr. Brian Kahn 10/03–4/05 (UCLA, now researcher at NASA JPL/CalTech), Dr. Aparna Krishnamurthy 6/06–6/09 (UCI, now researcher at IITM), Dr. Collin Lawrence 7/11–1/15 (UCI, now traveling), Dr. Calvin Liang 4/08–6/11 (UCLA, now researcher at NASA JPL/Northrop Grumman), Dr. Huidong Liu 3/10–12/13 (UCI), Dr. Zhao Liu 3/11–10/14 (UCI), Dr. MinHui Lo 5/07–6/10 (UCI, now professor at NTU), Dr. Marco Rodriguez 1/02–3/04 (UCI, now researcher at CSU CIRA), Dr. Brendan Rogers 7/11–3/14 (UCI, now postdoc at WHRC) Dr. Kurt Solander 4/13–4/16 (UCI, now postdoc at LLNL)
3. Member of Advancement (and not Thesis) Committee: Dr. Ray Anderson 5/07–6/07 (UCI, now at UCI), Ms. Sarah Bortz 4/04–6/04 (UCI), Dr. Colene Haffke 7/11–6/13 (UCI), Ms. JungWook Lee 6/01–9/01 (UCI)
4. Postdoctoral scholars supervised: Dr. Robert Allen 10/08–10/10 (now professor at UCR), Dr. Cheng Dang 4/17–present, Dr. Huisheng Bian 10/01–9/03 (now researcher at UMBC GEST/NASA GSFC), Dr. Sagar Parajuli 6/16–9/17 (now researcher at KAUST), Dr. Wenshan Wang 1/18–present, Dr. Xianwei Wang 6/08–01/11 (now professor at Sun Yat-Sen Univ., Guangzhou, China)
5. Researchers supervised: Dr. Chao Luo 2/05–10/06 (now researcher at Georgia Tech), Dr. Harry Mangalam 2/05–3/06 (now research computing at UCI OIT), Dr. David Newman 11/01–4/03 (now research faculty at UCI ICS),
6. Software engineers supervised: Mr. Henry Butowsky 10/00–present (freelance programmer), Mr. Pat Jones 6/01–10/01 (whereabouts unknown), Mr. Ajay Saini 10/17–present, Mr. Dan Stromberg 1/04–12/05 (whereabouts unknown), Mr. Pedro Vicente 6/12–5/14 (commercial programmer), Dr. Dingying Wei 12/14–3/15 (database programming at UCI)
7. Total number of graduate students supervised: 11.

8. Total number of postgraduate scholars sponsored: 6.

STUDENT THESES: CHAIR OR CO-CHAIR OF COMMITTEE

- TC10. Zachary Wolff (Expected 2021): TBD. ([PDF](#))
- TC9. Morgan Gorris (Expected 2019): Fungal Spore Dispersal across the Southwestern United States. ([PDF](#)) Jointly supervised with ESS Prof. J. Randerson.
- TC8. Wenshan Wang (Expected 2017): The role of clouds in Greenland melt. ([PDF](#))
- TC7. Erin Delman (Expected 2017): Climate and Conflict ([PDF](#))
- TC6. Michael George Tosca, Jr. (2012): Fire and smoke in the Earth system: Evaluating the impact of fire aerosols on regional and global climate. Ph.D Thesis, 129 pp., University of California, Irvine. Jointly supervised with ESS Prof. J. Randerson. ([PDF](#))
- TC5. Qin Han (2010): Crustal Tracers in the Atmosphere and Ocean: Relating their Concentrations, Fluxes, and Ages. Ph.D Thesis, 127 pp., University of California, Irvine. Jointly supervised with ESS Prof. J. K. Moore. ([PDF](#))
- TC4. Scott Blair Capps (2009): Surface Wind Speed Distributions: Implications for Climate and Wind Power. Ph.D Thesis, 136 pp., University of California, Irvine. ([PDF](#))
- TC3. Daniel Liwei Wang (2008): Compilation, Locality Optimization, and Managed Distributed Execution of Scientific Dataflows. Ph.D Thesis, 140 pp., University of California, Irvine. Jointly supervised with EECS Prof. S. Jenks. ([PDF](#))
- TC2. Mark Gregory Flanner (2007): Effects of Vertically-Resolved Solar Heating, Snow Aging, and Black Carbon on Snow-Albedo Feedback. Ph.D Thesis, 110 pp., University of California, Irvine. ([PDF](#))
- TC1. Alf Grini (2004): Natural Aerosols in the Global Atmosphere. Ph.D Thesis, 85 pp., University of Oslo. Jointly supervised with UiO Prof. I. Isaksen. ([PDF](#))

STUDENT THESES: MEMBER OF COMMITTEE

- TM14. Kurt Solander (2016): Numerical modeling and remote sensing of global water management systems: Applications for land surface modeling, satellite missions, and sustainable water resources management. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)
- TM13. Collin Baxter Lawrence (2014): Glaciers and freshwater resources in a changing climate Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)
- TM12. Zhao Liu (2014): An Explicit Representation of River Networks in a Continental-Scale Catchment-based Land Surface Model Framework. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)
- TM11. Ann Bardin (2014): Novel Analysis Tools for Ocean Biogeochemical Models. Ph.D. Thesis, University of California, Irvine. (F. Primeau, Chair)
- TM10. Brendan Morris Rogers (2014): Towards a better understanding of boreal forest fires and their role in the climate system. Ph.D. Thesis, University of California, Irvine. (J. Randerson, Chair)
- TM9. Huidong Liu (2013): Lakes in Land Surface Models: Simulation and validation using satellite measurements. Ph.D. Thesis, University of California, Irvine. (J. Famiglietti, Chair)

- TM8. Calvin K. Liang (2011): A Multi-Sensor Perspective on the Tropical Interannual Variability of Humidity and Clouds Ph.D. Thesis, 131 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Anne-Marie Eldering (JPL), Chairs)
- TM7. MinHui Lo (2010): The Role of Groundwater in Hydrological Processes and Memory Ph.D. Thesis, 160 pp., University of California, Irvine. (J. Famiglietti, Chair)
- TM6. Aparna Krishnamurthy (2009): Simulating The Effects of Atmospheric Nutrient Deposition on Ocean Biogeochemistry. Ph.D. Thesis, 183 pp., University of California, Irvine. (J. K. Moore, Chair)
- TM5. Richard Allen Hansell, Jr. (2007): Ground and Satellite-Based Remote Sensing of Mineral Dust Using AERI Spectra and MODIS Thermal Infrared Window Brightness Temperatures. Ph.D. Thesis, 220 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Dr. Anne-Marie Eldering (JPL), Chairs)
- TM4. Brian Hannon Kahn (2005): The detection and characterization of cirrus cloud properties from simulated and observed high-spectral-resolution infrared radiances. Ph.D. Thesis, 133 pp., University of California, Los Angeles. (K. N. Liou (UCLA) and Dr. Anne-Marie Eldering (JPL), Chairs)
- TM3. Marco Antonio Rodriguez (2004): Aerosol Dynamics in the Global Troposphere. Ph.D. Thesis, 129 pp., University of California, Irvine. (D. Dabdub, Chair)
- TM2. Aaron Andrew Berg (2003): Modelling and Analysis of Regional and Global Soil Moisture Variations Ph.D. Thesis, 119 pp., University of California, Irvine. (J. Famiglietti, Chair)
- TM1. Huisheng Bian (2001): Improvement and Application of UCI Chemistry Transport Model. Ph.D. Thesis, 299 pp., University of California, Irvine. (M. Prather, Chair)

STUDENT AWARDS

12. Morgan Gorris: Top Student Paper Presenter Award, AMS 8th Conference on Environment and Health, Seattle, WA, 1/17
11. Morgan Gorris: National Defense Science and Engineering Graduate Fellowship, AY 2017–19
10. Morgan Gorris: Borrego Valley Endowment Fund fellowship, 2016–2018
9. Alex Krolewski: Intel Science Talent Search (STS) 2011 Semifinalist, 2/11
8. Mike Tosca: NASA Earth and Space Science Fellowship (ESSF), AY 2008–11
7. Scott Capps: UCI School of Physical Sciences ARCS Foundation Scholar, AY 2007–09
6. Scott Capps: First Place Poster Presentation Award, AMS Air-Sea Interaction Conference, Portland, OR, 10/07
5. Scott Capps: Outstanding Contributions to the Department of Earth System Science, 2006
4. Mark Flanner: NASA Earth and Space Science Fellowship (ESSF), AY 2005–07
3. Mark Flanner: Outstanding Presentation, UCI Institute for Geophysics and Planetary Physics, 2006
2. Mark Flanner: UCI Medal Award, 2005
1. Mark Flanner: Outstanding Student Presentation in Atmospheric Sciences Section, Fall AGU Meeting, San Francisco, CA, 12/05

OTHER GRADUATE RESEARCH SUPERVISION

4. Alok Dadlani 12/15– (UCI CS)
3. Gayathri Venkitachalam 12/04–7/05 (UCI, withdrew)
2. Eun Young Kwon 3/03–12/03 (UCI, transfer)
1. Sarah Bortz 9/02–6/03 (UCI, transfer, withdrew)

UNDERGRADUATE RESEARCH SUPERVISION

- U8. Jerome Mao 1/16–
- U7. Andrew Miller 6/13–12/13 (NSF REU student from The College of New Jersey, NJ)
- U6. Michelle Serino 6/12–8/12 (NSF REU student from Millersville University, PA)
- U5. Alex Krolewski 9/11–4/12 (Harvard University, Cambridge, MA)
- U4. Michael Brown 3/05–2/06 (SURF-IT)
- U3. Danielle Johnson 6/05–8/05
- U2. Stephen Bamattre 7/01–1/03 (UROP)
- U1. Hyeryun Kim 5/00–6/01

HIGH SCHOOL RESEARCH SUPERVISION

- HS1. Alex Krolewski 6/10–8/11 (University High School, Irvine, CA)

COURSES TAUGHT (F, W, S, É = Fall, Winter, Spring, Été=Summer academic quarter or semester of year YY)

1. ESS 5, The Atmosphere: S00*, S01*, S02*, S03, S04, S05 (*ESS 20E)
2. ESS 11, Climate Change and Policy: W06, W07
3. ESS 55, Earth's Atmosphere: S18
4. ESS H90, The Idiom and Practice of Science: Geoengineering: F08, F09, F10, S12
5. ESS 110, Environmental Controversies: S12, S13, F13, F14
6. ESS 112/222, Global Climate Change and Impacts: W16
7. ESS 172/272, Science Communication & Outreach: W12*, S12*, F12*, W13, S13 (*ESS 280A)
8. ESS 199, Undergraduate Research: S00, F00, S02, F02, S05, F05, W06, É12, É13
9. ESS 200, Global Physical Climatology: F13*, F14, F15, F16, F17 (*ESS 280A)
10. ESS 204B, The Planetary Boundary Layer: W04, W05, W06, W07
11. ESS 223, Earth System Physics: F02*, F03[†], F04[†], F05[†], F06[†], F08[†], F09, F10 (*ESS 201A, [†]ESS 200B)
12. ESS 231, Global Hydrology: S11
13. ESS 236, Radiative Transfer & Remote Sensing: W01* (*ESS 111/211)
14. ESS 282, Topics in Climate: Aerosol-Cloud-Climate Interactions: W02* (*ESS 233)
15. ESS 282, Topics in Climate: Global Climate Modeling: F09
16. ESS 282, Topics in Climate: Radiative Processes & Climate: W06*–S10*, S13, S14, S15 (*ESS 291)
17. ESS 286, Topics in Biogeochemistry: Chemistry, Composition, and Climate: F02
18. ESS 286, Topics in Biogeochemistry: Land Surface Process Modeling: W03
19. ESS 290, Departmental Seminar: F00–S01, W11–F13
20. ESS 298, Practicum in Earth System Science: S03, W10, F10, S13, S15
21. ESS 299, Research: All quarters W02–W12, F12, F13–present

22. ESS 399, University Teaching: S00, S01, S02, S03, S04, S05, W06, W07, F08, F09, F10, S12
23. COA Calculus I & II, College of the Atlantic, Bar Harbor, ME: S91
24. COA Physics I, COA: S91

SPECIAL PEDAGOGICAL ACTIVITIES

- PA4. Workshop organizer and host, Science Communication and Outreach Workshop “K-to-Gray: Communicating Science to Students of All Ages”, 35 participants, University of California, Irvine, January 30, 2012.
- PA3. Participant, [COMET](#) Summer 2011 [Course](#) for Faculty on Integrating Satellite Data and Products into Geoscience Courses with Emphasis on Advances in Geostationary Satellite Systems, Boulder, Colorado, August 8–12, 2011.
- PA2. Organizer, NCAR Command Language (NCL) Workshop. ESS UCI, September 14–17, 2010.
- PA1. Participant, Asilomar International [Conference](#) on Climate Intervention Technologies, Monterey, CA, March 22–26, 2010.

SPONSORED RESEARCH PROJECTS

- G22. PI DOE ([LLNL-B625903](#)): “High-Performance Analysis and Regriding Support for ACME” \$199985, 10/5/2017–9/30/2018.
- G21. PI NASA Advanced Information Systems Technology (AIST 2016) ([AIST NNH13ZDA001N](#)): “JAWS: Justified AWS-like data through workflow enhancements that ease access and add scientific value”, \$888828, 10/1/2017–9/30/2019.
- G20. Co-I DOE Advanced Research Projects Agency—Energy (ARPA-E) Transportation Energy Resources from Renewable Agriculture (TERRA) Project “Reference Data and Computing Pipeline for High Throughput Phenotyping to Support Breeding of Biomass Sorghum”, ([DE-AR0000594](#)): (PI: David LeBauer, UIUC) \$99740, 12/1/2015–11/30/2017.
- G19. PI Borrego Valley Endowment Fund Fellowship for Morgan Gorris (BVEF-204987): “Evaluating, Modeling, and Attributing Particulate Matter Air Quality in Borrego Springs”, \$65608, 1/1/2016–12/31/2018.
- G18. PI DOE Accelerated Climate Modeling for Energy (ACME) University Partnership ([DE-SC0012998](#)): “Snow Radiative Harmonization across ACME” \$202368, 5/1/2016–12/14/2018.
- G17. Co-PI NSF Integrative and Collaborative Education and Research (ICER) Program grant jointly funded by the Directorate for Geosciences (GEO), and Directorate for Computer & Information Science & Engineering (CISE), Division of Advanced Cyberinfrastructure (ACI), ([AGS-1541031](#)): “EarthCube IA: Collaborative Proposal: Advancing netCDF-CF for the Geoscience Community”, (PI: Ethan Davis, UCAR Unidata, four Co-PIs), \$1091266 (\$77732 to UCI), 9/1/2015–8/31/2018.
- G16. PI DOE Accelerated Climate Modeling for Energy (ACME) University Partnership ([DE-SC0012998](#)): “Lightweight Climate Analysis Tools for ACME” \$300000, 12/15/2014–12/14/2017.

- G15. PI NASA Advancing Collaborative Connections for Earth System Science (ACCESS 2013) ([ACCESS NNX14AH55A](#)): “Easy Access to and Analysis of NASA and Model Swath-like Data”, \$622302 (\$545094 to UCI), 7/1/2014–6/30/2017.
- G14. PI NASA Advancing Collaborative Connections for Earth System Science (ACCESS 2011) ([ACCESS NNX12AF48A](#)): “Simplifying and accelerating model evaluation by NASA satellite data”, \$490923, 2/8/2012–2/7/2015.
- G13. Co-PI NASA Earth and Space Science Fellowship for Mike Tosca (ESSF NNX08AU90H): “Linking El Niño and biomass burning in a coupled feedback system”, (PI: Jim Randerson, UCI), \$72000, 9/1/2008–8/31/2011.
- G12. PI NSF grant jointly funded by Office of Polar Programs (OPP), Division of Arctic Sciences (ARC), Arctic Natural Sciences (ANS) Program and Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Climate and Large-Scale Dynamics (CLD) Program ([ARC-0714088](#)): “Snow Process Studies and Modeling to Improve Arctic Climate Prediction” \$518482, 9/1/2007–8/31/2011.
- G11. PI NASA International Polar Year (IPY) ([IPY06 NNX07AR23G](#)): “Black Carbon Impacts on Cryospheric Climate Sensitivity and Surface Hydrology”, \$607000, 8/2/2007–8/1/2011.
- G10. Co-PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Biocomplexity in the Environment (BE) Program ([ATM-0628637](#)): “Collaborative Research: Fire at the Intersection of Global Carbon and Water Cycles”, (PI: Jim Randerson, UCI, four Co-PIs), \$595689, 10/1/2006–9/30/2010.
- G9. PI NASA Earth and Space Science Fellowship for Mark Flanner (ESSF NNG05GP30H): “Climate Sensitivity To Snow Radiative Processes: Improving Physical Representation And Understanding With MODIS/MISR” \$48000, 9/1/2005–8/31/2007.
- G8. Co-PI NSF Directorate for Geosciences (GEO), Division of Oceanography (OCE), Chemical Oceanography Program ([OCE-0452972](#)): “Global Atmospheric Nutrient Deposition and Ocean Biogeochemistry”, (PI: Keith Moore, UCI), \$499001, 3/15/2005–2/29/2009.
- G7. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Small Grant for Exploratory Research (SGER) Program ([ATM-0503148](#)): “SGER: Improving CCSM Snow/Ice Radiative and Heating Processes and Assessing the Importance of the Soot Albedo Effect”, \$26828, 2/1/2005–1/31/2006.
- G6. PI NSF Directorate for Computer and Information Science and Engineering (CISE), Division of Information and Intelligent Systems (IIS), Science and Engineering Informatics (SEI) Program ([IIS-0431203](#)): “SEI(GEO): Scientific Data Operators Optimized for Distributed Interactive and Batch Analysis of Tera-Scale Geophysical Data”, \$594417, 9/1/2004–8/31/2008.
- G5. Co-PI NSF Directorate for Computer and Information Science and Engineering (CISE), Division of Computer and Network Systems (CNS), Major Research Instrumentation (MRI) Program ([CNS-0421554](#)): “HIPerWall: A High-Performance Visualization System for Collaborative Earth System Sciences” (PI: Falko Kuester, UCI), \$562190 (\$393533 NSF + \$168657 UCI), 9/1/2004–8/31/2007.
- G4. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Major Research Instrumentation (MRI) Program ([ATM-0321380](#)): “Acquisition of an

Earth System Modeling Facility for Coupled Climate, Chemistry, and Biogeochemistry Studies”, \$1105k (\$773543 NSF + \$332000 UCI), 8/1/2003–7/31/2006.

- G3. PI NSF Directorate for Geosciences (GEO), Division of Atmospheric Sciences (ATM), Earth System History (ESH) Program ([ATM-0214430](#)): “Collaborative Proposal: Using Measurements from the Columbia Plateau Eolian System to Improve Global-Scale Models of Mineral-Dust Aerosols” (Collaborative with Alan Busacca, WSU, [ATM-0214508](#), \$311500), UCI share \$88395, 8/1/2002–7/31/2005.
- G2. PI NASA New Investigator Program (NIP) (NAG5-10546): “Influence of Mineral Dust Aerosol on the Chemical Composition of the Atmosphere”, \$330000, 1/1/2001–12/31/2004.
- G1. Co-PI NASA Interdisciplinary Science (IDS) (NAG5-10147): “Effects of land-use on climate and water resources: Application of a land surface model for land-use management” (PI: Gordon Bonan, NCAR), \$360000, UCI share \$60000, 1/1/2000–12/31/2002.

PEER-REVIEWED INTERNAL RESEARCH PROJECTS

- GI3. PI UC Irvine Physical Sciences Committee on Research (COR) ([COR 2013](#)): “Marine Weather Station for Coastal Wind Power Studies and Education”, \$3500, 12/16/2013.
- GI2. Co-PI UC Irvine CORCLR Multi-Investigator Faculty Research Grant: “Earth and Planetary System Science Game Engine (EPSS-GE)”, (PI: Falko Kuester, UCI, two Co-PIs), \$15250, 7/1/2005–6/30/2006.
- GI1. PI UC Irvine Undergraduate Research Opportunity Program (UROP): “Contribution of Resonance Peaks to Aerosol Absorption”, \$400, 2002–2003.

PEER-REVIEWED COMPUTATIONAL RESOURCE GRANTS

- GC3. Co-PI DOE Innovative and Novel Computational Impact on Theory and Experiment ([INCITE](#)) (PI: Mark Taylor, SNL) support for DOE ([DE-SC0012998](#)): “Accelerated Climate Modeling for Energy”, (PI: Dave Bader, LLNL), 90M core hours on Titan, 290M core-hours on Theta, 1/1/2018–12/31/2019.
- GC2. PI NCAR Computational & Information Systems Laboratory (CISL) project #36271015, support for NSF ([ATM-0628637](#)): “Collaborative Research: Fire at the Intersection of Global Carbon and Water Cycles”, (PI: Jim Randerson, UCI), 180,000 GAUs, 6/1/2009–9/30/2010.
- GC1. PI NCAR Computational & Information Systems Laboratory (CISL) project #36271015, support for NSF ([ATM-0628637](#)): “Collaborative Research: Fire at the Intersection of Global Carbon and Water Cycles”, (PI: Jim Randerson, UCI), 148,220 GAUs, 5/1/2007–2/28/2009.

HONORS

- H4. Kavli Frontiers Fellow, US National Academy of Sciences and Alexander von Humboldt Foundation of Germany: 2009, 2010, 2011
- H3. NASA New Investigator Program (NIP) Award, 1/01–12/04
- H2. Outstanding Contributions to Undergraduate Education Award, UC Irvine School of Physical Sciences, Department of Earth System Science, AY 2001-02

H1. Outstanding Student Presentation in Atmospheric Sciences Section, Fall AGU Meeting, San Francisco CA, 12/95

FELLOWSHIPS

- F6. Gaspar de Portolà Catalonian Studies Program Scholarly Exchange Fellowship, University of California, 2004
- F5. Advanced Study Program (ASP) Postdoctoral Fellowship, NCAR, 7/96–6/98
- F4. Graduate Fellowships, University of Colorado at Boulder, 1992–1994
- F3. NASA Earth Science Summer School Fellowship, La Jolla, CA, 6/92
- F2. IBM Thomas J. Watson Scholarship, Harvard University, 1982–1986
- F1. Summer Science Program ([SSP](#)), Ojai, CA, 1981

MEMBERSHIPS

- M7. European Geosciences Union, 2004, 2008, 2012, 2016.
- M6. Global Change & Terrestrial Ecosystems (GCTE), Focus 3: Soil Erosion Network (SEN), 2003–2010.
- M5. American Association for Aerosol Research (AAAR), 2003–2004.
- M4. NCAR CCSM Biogeochemistry Working Group, 2000–2010.
- M3. NCAR CCSM Atmospheric Model Working Group, 1996–2010.
- M2. American Meteorological Society (AMS), 1994–2010.
- M1. American Geophysical Union (AGU), 1993–present.

CONSULTING ACTIVITIES, GOVERNMENT AND INDUSTRY

- C12. Scientific Advisor, Long Beach [Aquarium of the Pacific](#). Science on a Sphere educational facility, 2009–present. (*pro bono*)
- C11. Expert Witness on Valley Fever transmission and exposure for Law Offices of Hinton Alfert & Kahn, LLP, in *Hukill, et al. vs. State of California, et al.*
- C10. Consultant, Institute of Governance and Sustainable Development ([IGSD](#)). Climate mitigation strategies and black carbon. October 6, 2008. (*pro bono*)
- C9. Consultant, [Earthjustice](#). Environmental impacts of black carbon emissions due to energy exploration and recovery in the Arctic, September 17, 2008. (*pro bono*)
- C8. Consultant, Clean Air Task Force ([CATF](#)). Effects of short-lived pollutants, especially black carbon aerosol, on Arctic climate ([SPAC](#)), 2007–2009. (*pro bono*)
- C7. Expert witness ([Video](#), [Oral](#), [Written](#)) at the United States House of Representatives Oversight and Government Reform Committee hearing on Black Carbon and Climate. Washington, DC, October 18, 2007. (*pro bono*)
- C6. Reviewer for Prentice Hall “Understanding Weather and Climate” undergraduate text. 2007. (paid)
- C5. Consultant, US EPA Alaska Air Quality Workgroup. Fugitive dust. May 2, 2007. (*pro bono*)
- C4. Reviewer for Holt, Rinehart, and Winston “California Earth Science” middle-school texts. 2005. (paid)
- C3. Member, [California Climate Change Advisory Committee](#), 10/04–6/05. (*pro bono*)

- C2. Reviewer for Prentice Hall “Understanding Weather and Climate” undergraduate text. 2003. (paid)
- C1. US Advisor to International Science and Technology Center (ISTC) on Aral Sea Remediation. 2002–2004. (*pro bono*)

PROFESSIONAL DEVELOPMENT

- PD4. Embedding Research in Undergrad Classes [Workshop](#), American Geophysical Union and National Association of Geoscience Teachers, San Francisco, CA, December 16, 2015.
- PD3. Communicating Science [Workshop](#), University of California, Irvine. April 9, 2013.
- PD2. Communicating Climate Science [Workshop](#), American Geophysical Union and Union of Concerned Scientists, San Francisco, CA, December 2, 2012.
- PD1. Integrating Satellite Data and Products into Geoscience Courses with Emphasis on Advances in Geostationary Satellite Systems, Faculty Residence Course, UCAR/COMET, Boulder, CO, August 8–12, 2011.

SERVICE TO PROFESSIONAL SOCIETIES, CONFERENCE ORGANIZATION, EDITORIAL

- SP36. Judge, Outstanding Student Presentation Award (OSPA), American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.
- SP35. Primary Convener (with Joe Hamman and Ryan Abernathey): Session IN32: New Approaches to Analyze Big Geoscientific Datasets, American Geophysical Union Fall Meeting, New Orleans, LA, December 11–15, 2017.
- SP34. Expert Contact, American Association for the Advancement of Science (AAAS) SciLine <http://http://climatevoices.org>, October, 2017–present.
- SP33. Co-Chair (with John Augustine), Session TH-III: Climate and Climate Change in Tropics, Fourth Santa Fe Conference on Global & Regional Climate Change ([website](#)), Santa Fe, NM, February 5–10, 2017.
- SP32. Co-Chair (with Peter Leonard), NASA Earth Science Data Systems (ESDS) Dataset Interoperability Working Group (DIWG) ([DIWG](#)), 2013–2016.
- SP31. Panel reviewer, NASA Earth Venture Instruments (EVI-3) Program, Washington, DC, October 21–23, 2015.
- SP30. Panel reviewer, DOE Regional and Global Climate Modeling (RGCM) Program, Scientific Discovery through Advanced Computing (SciDAC) and Climate Variability and Change proposals. Gaithersburg, MD, April 21–23, 2014.
- SP29. Panel reviewer for DOE Earth System Modeling (ESM) Program, Scientific Discovery through Advanced Computing (SciDAC) proposals. Gaithersburg, MD, April 21–23, 2014.
- SP28. Speaker, Climate Voices <http://http://climatevoices.org>, February, 2014–present.
- SP27. Technical reviewer, Royal Netherlands Meteorological Institute (KNMI) TROPOMI L2 Input Output Data Definition (IODD). November, 2013.
- SP26. Co-Chair, with Peter Leonard, NASA Earth Science Data Systems (ESDS) Conventions for HDF5 Working Group (HDF5WG) ([HDF5WG](#)), January, 2013–November, 2013.

- SP25. Member, American Geophysical Union (AGU) Expert Outreach Network [AEON](#), May, 2013–present.
- SP24. Member, Expert Council of the [Climate Collaboratorium](#), 2010–2012.
- SP23. Reviewer, U.S. Global Change Research Program (USGCRP) 2012–2021 Strategic Plan. November, 2011.
- SP22. Symposium Organizing Committee Member and Co-Convener (with Gregor Rehder), Earth Sciences Session: Climate Change and Biodiversity: Paradise Lost or Found? Seventeenth Annual German-American Kavli Frontiers of Science ([GAFOS](#)) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Irvine, CA, April 8–11, 2011.
- SP21. Member, American Geophysical Union (AGU) Climate Science [Q&A Service](#), November, 2010–April 2013.
- SP20. Symposium Organizing Committee Member and Co-Convener (with Gregor Rehder), Earth Sciences Session: World Water Resources, Sixteenth Annual German-American Kavli Frontiers of Science ([GAFOS](#)) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Potsdam, Germany, June 2–5, 2010.
- SP19. Member, drafting committee, and Contributing Author of International Global Atmospheric Chemistry (IGAC) report “Bounding the Role of Black Carbon in Climate” University of Tokyo, January 25–28, 2010.
- SP18. Panel reviewer, NSF/DOE/USDA Earth System Model (EaSM) Program. Arlington, VA, August 24–26, 2010.
- SP17. Member, American Geophysical Union (AGU) Climate Science Experts Referral [Service](#), December, 2009–April, 2013.
- SP16. Panel reviewer, NSF Climate and Large-Scale Dynamics (CLD) Climate Process Team (CPT) Program. Arlington, VA, December, 2009.
- SP15. Chair, Session 2a: Observations of Mineral Aerosol and Dust Storm Events, Chinese Academy of Sciences (CAS) - Third World Academy of Sciences (TWAS) - World Meteorological Organization (WMO) Forum (CTWF) International Workshop on Mineral Aerosol and Impacts on Climate and Environment, Lanzhou, China, August 17–19, 2009.
- SP14. Co-Organizer (with Manuel Lerdau and Gregor Rehder), Earth Sciences Session: Aeolian Dust—Generation, Transport, and its impacts on Climate and Biogeochemistry, at the Fifteenth Annual German-American Kavli Frontiers of Science ([GAFOS](#)) Symposium of the Alexander von Humboldt Foundation and the U.S. National Academy of Sciences, Irvine, California, June 5–7, 2009.
- SP13. Lead Convener (with Mark Flanner, Joe McConnell, Jing Ming, and Tom Painter), Session C41: Snow and Ice Impurities: Chemical, Climate, and Hydrologic Significance, American Geophysical Union Fall Meeting, San Francisco, CA, December 15–19, 2008.
- SP12. Panel reviewer, NASA MAP Program Clouds/Aerosols/Radiation proposals. Greenbelt, MD, November 19–21, 2008.
- SP11. Lead Convener (with George Kallos, Andrea Flossmann, and Alcide Giorgio di Sarra), Symposium MS04: Mineral Dust Cycle and its Impact on Clouds and Radiation, 2007 Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), Perugia, Italy, July 2–13, 2007.
- SP10. Editorial Advisory Board (Atmospheric Sciences), *Eos Trans. American Geophysical*

- Union (AGU), May 2007–February 2008.
- SP9. Panel reviewer, NASA EOS Program, Aerosol/Clouds proposals. Greenbelt, MD, March 19–21, 2007.
- SP8. Science Program Committee: Aerosol Workshop on Climate Prediction Uncertainties, Santa Fe, New Mexico, July 20–21, 2006.
- SP7. Science Program Committee and Conference Rapporteur: 2nd International Conference on Global Warming and the Next Ice Age, Santa Fe, New Mexico, July 17–19, 2006.
- SP6. Expert Reviewer, Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), Working Group I Contribution. September, 2005–June, 2006.
- SP5. Co-Convener (with Zev Levin and Zifa Wang), Symposium A5: Mineral Dust Processes from Microphysical to Climate Scales, 2005 Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences (IAMAS), Beijing, China, August 2–11, 2005.
- SP4. Panel reviewer, NSF CISE SEI Program, GEO proposals. Arlington, VA, March 31–April 2, 2005.
- SP3. Co-Convener (with Ron Miller), Session A05: Constraining the Global Mass Distribution of Mineral Dust Aerosol, Spring Meeting of the American Geophysical Union and Canadian Geophysical Union, Montreal, Canada, May 17–21, 2004.
- SP2. Co-Chair (with Itsushi Uno), Session 5: Regional and global dust modeling: emission, transport, deposition and associated effects at the Second International Workshop on Mineral Dust, Paris, France, September 10–12, 2003.
- SP1. Expert Reviewer, Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report (TAR), Working Group I Contribution. November, 2000.

AD HOC SERVICE AS MANUSCRIPT REVIEWER AND PROPOSAL REF- EREE

- SR2. Reviewed one manuscripts and proposals between October 1, 2016 and September 30, 2019: NSF GEO PLR ANS,
- SR1. Reviewed manuscripts and proposals for following agencies/programs and journals since career began: *Adv. Meteorol.*, *Atmos. Chem. Phys.*, *Atmos. Environ.*, *Atmos. Res.*, *Bull. Am. Meteorol. Soc.*, *Clim. Dyn.*, CRDF, DOE (ESM, RGCM: SciDAC & CVC Panels 2014, SciDAC SGER), *Deep-Sea Research II*, *Ecological Applications*, *Energy & Environmental Science*, *Eos* (Editorial Advisory Board), *Frontiers in Eco. Evol.*, *Geophys. Mod. Develop.*, *Geophys. Res. Lett.*, *Global Biogeochem. Cycles*, *Global Plan. Change*, *Int. J. Biometeorol.*, IPCC WG1 (TAR, AR4, AR5), IPEV, *J. Arid. Env.*, *J. Atmos. Ocean. Tech.*, *J. Atmos. Sci.*, *J. Climate*, *J. Environ. Qual.*, *J. Geophys. Res. Atmos.*, *J. Geophys. Res. Solid Earth*, KNMI, *Kuwait J. Sci. Eng.*, *Mar. Chem.*, *Mon. Weather Rev.*, NASA (ACRM, EOS: AC Panel 2007, ESDS SPG, EVI: EVI-3 Panel 2015, GMAP, IDS, NIP, MAP, MAP: CAR Panel 2008, RSP, TCP, UARP), *Nature*, *Nature Clim. Change*, NERC (UK), NOAA (OAR, OGP), NSF (GEO: AGS/ATM ACP, CHE, CLD, CPT Panel 2009, EaSM Panel 2010, LSD; EAR: SEP GLD; CISE: IIS SEI/GEO Panel 2007; OD: OIA CAREER, MRI, OISE IRES, OPP ANS ANT AGP) *Proc. Natl. Acad. Sci.*, *Q. J. R. Meteorol. Soc.*, *Remote Sensing*, *Science*, SNSF, *Tellus*, *The Cryosphere*, USCCRP, USGCRP

PROFESSIONAL ON-LINE RESOURCES PRODUCED/EDITED/MAINTAINED

- SO6. Author/maintainer: Dust Entrainment and Deposition ([DEAD](#)) on-line model. 2002–present.
- SO5. Author/maintainer: Freely Available Community Texts ([FACTs](#)). 1999–present.
- (a) [Radiative Transfer in the Earth System](#)
 - (b) [Natural Aerosols in the Climate System](#)
 - (c) [Particle Size Distributions: Theory and Application to Aerosols, Clouds, and Soils](#)
- SO4. Author/maintainer: Mineral Dust and Climate Bibliography ([PDF](#)). 1998–2012.
- SO3. Author/maintainer: of Enhanced Absorption Bibliography ([PDF](#)). 1997–2012.
- SO2. Co-author/maintainer: NCAR CCM Column Radiation Model ([CRM](#)). 1996–present.
- SO1. Author/maintainer: netCDF Operators ([NCO](#)). 1995–present.

SERVICE TO UNIVERSITY (SYSTEMWIDE)

- SU1. University of California (UC) Assembly of the Academic Senate, UCI Divisional Representative. AY 2010–12.

SERVICE TO CAMPUS

- SC11. Provost Initiative on Understanding and Engaging with Extremism, Review Committee, UCI, AY 2017-18.
- SC10. Graduate Opportunity (GOF) Fellowships, Reviewer, UCI, Feb. 2015.
- SC9. University of California Academic Senate, Divisional Senate Assembly, Member, UCI, AY 2002–2007, 2010–12.
- SC8. Sustainability Tracking Assessment & Rating System (STARS), Ad Hoc Faculty Working Group on, Member, AY 2011–2013.
- SC7. Campuswide Honors Program (CHP), ESS Faculty Liaison. UCI, AY 2008–14.
- SC6. Study Abroad Center (SAC, formerly Center for International Education, CIE), ESS Faculty Liaison. UCI, AY 2008–present.
- SC5. University Corporation for Atmospheric Research (UCAR), Member Representative. UCI, AY 2002–present.
- SC4. Academic Senate Cabinet, Member. UCI, AY 2005–07.
- SC3. Academic Senate Council on Student Experience (CSE), Chair. UCI, AY 2005–07.
- SC2. Academic Senate Council on Student Experience (CSE), Member. UCI, AY 2004–05.
- SC1. Academic Senate Committee on Courses, Member. UCI, AY 2001–04.

SERVICE TO SCHOOL

- SS6. External Member, Search Committee for Exoplanetary Scientist, Dept. of Physics and Astronomy, UCI, 2/15–2/16
- SS5. Achievement Rewards for College Scientists ([ARCS](#)) Scholarship Selection Panel, Member. School of Physical Sciences (SPS), UCI, 2012.
- SS4. Communications Task Force, Member. SPS UCI, AY 2008–13.
- SS3. Representative to Divisional Senate Assembly. SPS UCI, AY 2002–05.
- SS2. Committee on Research, Member. SPS UCI, AY 2002–05.

SS1. Instructional Computing Committee, Member. SPS UCI, AY 2002–05.

SERVICE TO DEPARTMENT

- SD12. Diverse Educational Community and Doctoral Experience ([DECADE](#)) Graduate Program Mentor, 9/12–8/16.
- SD11. Vice Chair of Graduate Studies. Earth System Science Department (ESS), UCI, AY 2010–13.
- SD10. Chair, Graduate Admissions Committee. ESS UCI, AY 2010–13.
- SD9. Physical Climate faculty search committee, Co-Chair. ESS UCI, AY 2011–12.
- SD8. Technology Coordinator staff search committee, Co-Chair. ESS UCI, AY 2009–10.
- SD7. Earth System Modeling Facility (ESMF), Director. ESS UCI, 2004–2009.
- SD6. Abrupt Climate Change faculty search committee, Member. ESS UCI, AY 2005–06.
- SD5. Course re-organization coordinator. ESS UCI, 2001–03.
- SD4. Test of English Proficiency (TOEP), Grader. ESS UCI, F02, S10.
- SD3. Seminar Coordinator. ESS UCI, AY 1999–00.
- SD2. Astrophysical Planetary and Atmospheric Sciences (APAS) Department, University of Colorado at Boulder (CU): Founder/Director of APAS Help Center, a free tutoring center for undergraduates. 1992–1995.
- SD1. Graduate student representative to United Government of Graduate Students (UGGS). APAS CU, AY 1991–93.

DIVERSITY ACTIVITIES

- DA15. Participant, 9th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, Sept. 2015
- DA14. External Member, Search Committee for Exoplanetary Scientist, Dept. of Physics and Astronomy, UCI, 2/15–2/16 (hired UC President’s Postdoctoral Fellow as Assistant Professor)
- DA13. Reviewer, Graduate Opportunity Fellowships (GOF), UCI, Feb. 2015
- DA12. Scientist Representative, <http://www.math4science.org/meet-the-scientists3/charles-zender>, 2014–present
- DA11. Participant, 8th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, Sept. 2014
- DA10. Mentored Andrew Miller (NSF REU student from The College of New Jersey, NJ), 6/13–8/13
- DA9. Participant, 7th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, Sept. 2013
- DA8. Panelist on “The Faculty Admissions Committee”, Graduate Resource Center, UCI, June 26, 2013
- DA7. Diverse Educational Community and Doctoral Experience ([DECADE](#)) Graduate Program Mentor, UCI ADVANCE Program, 9/12–8/16.
- DA6. Participant, 6th ADVANCE Institute for Equity, Diversity and Inclusion, UCI, Sept. 2012
- DA5. Collaborator with Aquarium of the Pacific (AOP) in Long Beach on successful NASA Competitive Program for Science Museums and Planetariums (CP4SMP) proposal “Our Instrumented Earth: Understanding Global Systems and Local Impacts through the El Niño Story” (PI: Jerry Schubel), to teach the El Niño story at AOP and, personally, at professional development workshops for dozens of Title I (underprivileged) K-12 teachers, 7/12–6/15.

- DA4. Mentored Michelle Serino (NSF REU student from Millersville University, PA), 6/12–8/12.
- DA3. Developed Science Communication & Outreach Course (ESS 280), AY 2011–13. Helps UCI graduate students prepare and coordinate presentations to Under-Represented Minority (URM) K-12 schools (e.g., Santa Ana, Compton).
- DA2. As Academic Senate Council on Student Experience (CSE) Chair, AY 2005–07, led or moderated CSE contribution to diversity activities, including:
- (a) Established CSE’s sub-committee on the Minority Student Experience.
 - (b) Regular discussion of UCUES survey responses on campus diversity statistics.
 - (c) Incorporated consideration of diversity into Academic Senate CSE bylaws.
 - (d) Promulgated CSE recommendation to increase success rate of first-generation college students by instituting a mentoring program in undergraduate residence halls.
- DA1. Presented “[The Sun and Climate](#)” to the UCI [FOCUS](#) (Faculty Outreach Collaborations Uniting Scientists, Students and Schools) program, Irvine, CA, August 1, 2005.

PUBLIC SERVICE & EDUCATION PRESENTATIONS

- SE30. Presented “[Projected changes in dust emissions and regional air quality due to the shrinking Salton Sea](#)” to the [Borrego Valley Endowment Fund](#) public workshop, Steele/Burnand Anza-Borrego Desert Research Center, Borrego Springs, CA, February 27, 2018.
- SE29. Presented “[Climate Change: We Told You So](#)” at [East High School](#), Denver, CO, September 5, 2017.
- SE28. Presented “[Climate Change Challenges & Opportunities](#)” at the [Newport Beach Women’s Democratic Club](#), Newport Beach, CA, May 16, 2017.
- SE27. Presented “[Long term air quality issues in the Salton/Borrego region](#)” to the [Borrego Valley Endowment Fund](#) public workshop, Steele/Burnand Anza-Borrego Desert Research Center, Borrego Springs, CA, February 27, 2017.
- SE26. Presented “[How Geoengineering Affects Night Sky Visibility](#)” to four [El Dorado High School](#) classes, Placentia, CA, January 10, 2017.
- SE25. Presented “[My Career Path](#)” to a [University High School](#) assembly, Irvine, CA, April 14, 2016.
- SE24. Presented “[Climate Change in SoCal: Here. Now. Dude!](#)” to the [Newport-Irvine Rotary Club](#), Irvine, CA, July 2, 2015.
- SE23. Presented “[Satellites to Study the Earth](#)” to the Osher Lifelong Learning Institute (OLLI), Irvine, CA, January 16, 2015.
- SE22. Presented “[Climate Change in SoCal: Here. Now. Dude!](#)” to the [Pacific Life Insurance Law Retreat](#), Huntington Beach, CA, May 13, 2013.
- SE21. Presented “[Radioactivity and Wind: The Menace and Promise of Air](#)” to the [Idyllwild Community Recreation Council Speaker’s Series](#), Idyllwild, CA, January 18, 2012.
- SE20. Presented “[Radioactivity and Wind: The Menace and Promise of Air](#)” to the [University Club Forum](#), Irvine, CA, November 9, 2011.
- SE19. Presented “[Climate Change: A Southern California Perspective](#)” to the [Irvine Presbyterian Church](#), Irvine, CA, March 17, 2011.

- SE18. Presented “[How to Cool the Earth](#)” (Video) to the [Swiss-American Chamber of Commerce](#), Beverly Hills, CA, March 18, 2010.
- SE17. Presented “[Seeding a Cooler Climate with Ocean Winds, Waves, and Clouds](#)” (Video) to the [Aquarium of the Pacific](#), Long Beach, CA, September 9, 2009.
- SE16. Presented “[Our Sabbatical Year in France](#)” to the Ferons/Maddens third grade class at Vista Verde Elementary School, Irvine, CA, March 27, 2009.
- SE15. Presented “[Climate Change: Idyllwild’s Perspective](#)” to the [Idyllwild Community Recreation Council Speaker’s Series](#), Idyllwild, CA, February 18, 2009.
- SE14. Presented “[Polar Warming: Impure as the Driven Snow](#)” to the [Aquarium of the Pacific](#), Long Beach, CA, August 13, 2007.
- SE13. Presented “[Pretty, Nasty, Weather](#)” to the Vista Verde Elementary School first grade assembly, Irvine, CA, February 21, 2007.
- SE12. Presented “[Arctic Melt](#)” to the Osher Lifelong Learning Institute ([OLLI](#)), Irvine, CA, October 31, 2006.
- SE11. Presented “[Sunlight, Clouds, and Climate](#)” to the Osher Lifelong Learning Institute ([OLLI](#)), Irvine, CA, November 18, 2005.
- SE10. Presented “[The Sun and Climate](#)” to the UCI [FOCUS](#) (Faculty Outreach Collaborations Uniting Scientists, Students and Schools) program, Irvine, CA, August 1, 2005.
- SE9. Presented “The Scientific Consensus on Global Warming with a Southern California Perspective” to the Harbor Ridge Women’s Club, Newport Beach, CA, February 23, 2005.
- SE8. Presented “The Atmospheric Physics of Climate Change” to the Summer Science Program, Happy Valley School, Ojai, CA, July 17, 2004.
- SE7. Presented “The Scientific Consensus on Global Warming” to the Unitarian Universalist Church of Orange County, Costa Mesa, CA, August 18, 2004.
- SE6. Presented “Climate Change: A Southern California Perspective” to the Osher Lifelong Learning Institute ([OLLI](#)), Irvine, CA, February 27, 2003.
- SE5. Presented “Climate Change: A Southern California Perspective” to the Regent’s Point Retirement Community, Irvine, CA, February 2, 2003.
- SE4. Presented “Climate Change: A Southern California Perspective” to the Dartmouth Alumni Association of Orange County, Irvine, CA, March 13, 2002.
- SE3. Contributor to the Mathematics and Science Teachers Hotline (MAST) of the University of Northern Colorado, Greeley Colorado (800) 866-MAST. 1995–1999.
- SE2. Cosmic docent for public open house sky nights. [Sommers Bausch Observatory](#), University of Colorado at Boulder, 1991–1992.
- SE1. Cosmic docent for public open house sky nights. [Loomis-Michael Observatory](#), Harvard University, 1983–1984.